Transforming education in an era of climate change. From economic growth to degrowth discourses and cases of eco-logical practices in education.



Anna Kliampa Murray Edwards College February 2024 This dissertation is submitted for the degree of Doctor of Philosophy

Author's Declaration

This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the preface and specified in the text. It is not the same as any work that has already been submitted before for any degree or other qualification except as declared in the preface and specified in the text. It does not exceed the prescribed word limit for the Faculty of Education Degree Committee.

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Transforming education in an era of climate change. From economic growth to degrowth discourses and cases of eco-logical practices in education.

Anna Kliampa

Abstract

This research explores socio-ecological transitions in education that seek to problematise mainstream 'growthmanship', or, put simply, economic growth policy discourse in education. Building on a growing literature stemming mainly from ecological economists, as well as social and climate scientists on the pressures posed on social and ecological systems by the unbridled expansion of the economic sphere, I examine the role of education policy, programmes and initiatives in this narrative and its capacity to respond effectively to these challenges. In this respect, I ask whether/how education is positioned within a) economic growth and b) climate change discourses.

To explore these questions, the research draws theoretically from a critical Foucauldian discourse analysis framework. In doing so, it historicises economic growth, sustainable development and education discourses and their contingent relations. Moreover, the thesis is informed theoretically by critical socio-economic theories of sustainability, like degrowth and other socio-ecological perspectives, which are considered resisting voices to mainstream economic growth models. Having as a starting point these power relations, the thesis draws attention to the complex (dis)continuities of these discourses and their implications for education within a climate change framework through an analysis of education policies and programmes at multiple scales; global, national and local.

Voicing innovative, alternative, and creative ways of making the education sector more sustainable, the thesis emphasises educators' pedagogic practices at the analysis level. In this respect, my analysis reveals the contradictory character of environmental education where questions of natural space, materiality, and social context, weave its fundamental components. The degrowth and post-humanities theoretical frameworks at the analysis level expose the conflict-driven character of this topic, but also its potential to generate spontaneous, creative, pro-social and pro-environmental responses to modern problems through the field of education.

It has been the primary objective of this research to find ways to tackle the current socioenvironmental issues through education. In order to achieve this, it is crucial to understand the interrelated nature of sustainability politics. We must continue to examine these issues by expressing diverse perspectives and analyzing their power dynamics.

Keywords: Education for sustainability, climate change education, degrowth, post-humanities, Foucauldian discourses analysis, multiple case-study research.

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Glossary

- ✤ CCI: Cambridge Curiosity and Imagination
- CDA: Critical Discourse Analysis
- ✤ CEC: Community Economy Collectives
- DESD: Decade for Sustainable Development
- ✤ EFA: Education For All
- ✤ ES: Environmental Services
- ✤ ESD: Education for Sustainable Development
- ✤ GATS: Global Agreement on Trade in Services
- GCED: Global Citizenship Education
- ✤ GDP: Gross Domestic Product
- ✤ GKI: Global Knowledge Index
- ✤ GNP: Gross National Product
- ✤ GPS: Global Programme on Sustainability
- ✤ ICT: Information and Communication Technology
- IDTs: International Development Targets
- IKDP: Indigenous Knowledge for Development Programme
- ILO: International Labor Organization
- ✤ IMF: International Monetary Fund
- INES: International Educational Indicators
- IOs: International Organisations
- ✤ IPCC: Intergovernmental Panel on Climate Change
- ✤ KAM: Knowledge Assessment Methodology
- ✤ KE: Knowledge Economy
- ✤ K4D: Knowledge for Development
- ✤ LTS: The Little Tree School
- MDGs: Millennium Development Goals
- ✤ NAFTA: North American Free Trade Agreement
- ✤ NATO: North Atlantic Treaty Organisation
- NORAD: Norwegian Agency for Development Cooperation
- ✤ OECD: Organisation for Economic Co-operation and Development
- PISA: Programme for International Student Assessment
- ✤ SAPs: Structural Adjustment Programmes
- SD: Sustainable Development
- SDG's: Sustainable Development Goals
- SoN: The School of Nature
- ✤ TALIS: Teaching and Learning International Survey
- ✤ UCPS: The University of Cambridge Primary School
- ✤ UN: United Nations
- UNDP: United Nations Development Programme
- ✤ UNECE: United Nations Economic Commission for Europe

- ◆ UNESCO: The United Nations Educational, Scientific and Cultural Organization
- ✤ USAID: United States Agency for International Development
- ♦ WB: World Bank
- ✤ WCED: World Commission on Environment and Development
- ✤ WG: The Whitworth Gallery
- ✤ WTO: World Trade Organisation

SECTION ONE

PROBLEMATIC, CONCEPTUAL FRAMEWORK, METHODOLOGY

CHAPTER ONE PROBLEMATIC

1.0. Locating the Problem

This research explores socio-ecological transitions in education that seek to problematise mainstream 'growthmanship', or put simply, economic growth policy discourse in education. Building on a growing literature stemming mainly from ecological economists, and social and climate scientists on the pressures posed on social and ecological systems by the unbridled expansion of the economic sphere, I examine the role of education policy, programmes and initiatives in this narrative and its capacity to respond effectively to these challenges. In that respect, I ask whether/how education is positioned within a) economic growth and b) climate change discourses.

The Sustainable Development discourse has been fundamental in framing the socio-political background of climate change, especially after the 2015 United Nations Sustainable Development Goals (SDGs) and the Paris Agreement in the same year. Education is regarded as a force that can drive positive societal changes towards sustainability, as suggested through the concept of Education for Sustainable Development (ESD) and Goal 4 of the SDG's 'Quality education for all'.

Today, even though the idea of sustainable development enjoys a great deal of public support, some voices question its capacity to steer meaningful change. As has been argued by many, sustainability's meaning is ubiquitous and has been largely misinterpreted by policymakers (T. Brown, 2016; Cao et al., 2007; D'Alisa et al., 2015). For some, the most significant abuse of the term sustainability is when combining it with the word development. Taking Brown's (2016) account, sustainability can be socially

meaningful, should societies follow its radical rather than elitist translations. Others take a more polemical stance and argue that sustainable development is hostile capitalism, "cleaned of its heavy historical meaning, or beautified" (D'Alisa et al., 2015, p. 5).

Nonetheless, taking into consideration the increased pressures upon ecosystems globally by anthropogenic climate change, the questions this research seeks to address are intertwined with current knowledge on mitigating and adapting to climate change globally and locally (Kabisch et al., 2016). In this regard, education is examined as a set of institutions whose discursive powers and current and potential practices might steer positive socio-environmental changes. This becomes possible through education's disciplinary function to shape future citizens and cultivate cultural stances that are inclusive of the Natural world into development objectives that could enhance collective 'ecosensitivity'. Here Misiaszek's research on 'ecopedagogy' and 'ecolinguisitics' is insightful. He argues that redefining development language and practices has the potential to promote an all-inclusive education that includes The Other, indigenous knowledge, and Nature for an ecological transformation. Thus, re-reading the SDG 4, Misiaszek suggests that "Quality education' termed in SDG #4 must centre local-to-planetary readings of 'development' and 'sustainability'...' (Misiaszek, 2021, p. 4).

Even though environmental education (EE) and education for sustainable development (ESD) are characterised by complexity and often conflicted agendas (Kopnina, 2012; Mcphie & Clarke, 2020), the potential of ESD to contribute to transformations in education globally is widely recognised in the literature (Børresen et al., 2023; Lotz-Sisitka et al., 2015). There is also consensus in both environmental education and climate change education research that there is a need for an ecological pedagogy. According to Houghton et al., (2023), 'the anthropogenic climate crisis demands new and innovative teaching and learning practices that unsettle dominant pedagogies...' (p. 1). The authors

emphasize the importance of teaching 'affect', responsive pedagogies based on the local area, and future-oriented education to cultivate responsible attitudes towards the environment and future generations.

According to a recent study by Brandt et al. (2022), research has found that there is a lack of inclusion of a sustainability curriculum in teachers' professional development. The study suggests that university curriculum design should include a course that provides student teachers with background knowledge of sustainability and an opportunity to gain practical experience in the field (ibid, p. 1710). Edwards et al. (2023), explore ways to 'navigate eco-anxiety- and eco-detachment through activating 'agency and hope' in learning (p. 8), while Oberman (2023), investigates the power of positive emotions, like enjoyment and curiosity in teaching/learning and acting, on climate change. Børresen et al. (2023), suggest that including education on conservation biology in primary and secondary curricula can increase pro-environmental behaviour in local contexts.

Another important aspect of environmental education research focuses on the socio-political implications of neoliberal agendas on sustainable development education and environmental education's inherently political character (Hursh et al., 2015). Derby et al. (2015), too, is concerned with a 'troubling hybridization of neoliberalism and environmentalism', where uncritical pedagogies in artificial urban environments may obscure their relation to 'wilderness' and other possibilities for a critical place-based education (p. 379). Bessant et al. (2015), maintain a more neutral stance towards neoliberalism, arguing neoliberalism 'has presented multiple opportunities for enhancing and progressing sustainability and ESD' (p. 422).

Taking into account the pedagogical, critical, scientific, and socio-political aspects, environmental education and education for sustainable development form a complex entanglement. A common theme stemming from the literature is that an ecological pedagogy, or ecopedagogy, asks education to

unsettle common-sense socio-cultural discourses that are based on uncritical readings of nature and to re-organise the present historical context in ways that contribute to positive socio-environmental behaviours in the future. In this regard, an ecological reading of education could inform a need for a pedagogy that takes into account the capacity of the ecosystem to balance social justice imperatives. This pedagogy, according to Misiaszek (2021), Korsant (2022), and other Freirean theorists, should entail a holistic re-reading of the word 'development' and its implications for education, especially through language and meaning. It is crucial, therefore, to explore the different interpretations of sustainable development in education, which are often associated with opposing political objectives, especially the emphasis on economic growth in development stories.

The approaches and methods for implementing a comprehensive sustainability and climate change framework in education differ and are largely stagnant in education policy. This is the issue that this thesis addresses and in doing so, it considers a degrowth perspective when analysing the role of education in promoting sustainability and addressing climate change. This means questioning the common idea of sustainability in educational contexts and adding another nuance to the conversation about how we can educate ourselves to mitigate and adapt to climate change. The concept of "degrowing" emphasizes the need to live within the limits of our planet, which should be an integral part of any discussion around education and climate change.

Taking it all in, the research delves into the complex issue of what kind of education can be both desirable and feasible within a continuously expanding production and consumption model, taking into consideration the urgent challenges posed by climate change. Following this line of thought, this research a) builds on existing knowledge on the role of education in the era of economic growth and sustainability, b) addresses knowledge gaps in the field of degrowth and education theory, c) adds to

the growing literature on fostering pro-environmental educational pedagogies that connect to relevant policy making in the field of mitigating/adapting to climate change through education in the long run.

1.1. Research Aim and Questions

The overarching aim of the research is to explore ecological paradigms in education that place ecosystems' balance and social sustainability at the heart of their educational programme. Aiming at embodying an environmentally and socially sustainable school, I will look at how climate change discourse contributes to relevant pedagogical interventions.

As has been mentioned briefly, the environmental discourses of previous decades have been largely absorbed by sustainable development language, considered by many 'greenwashed' modernisation. All in all, late modern discourses are characterised by conflict, contradictions and elasticity, and sustainability could not be a more pertinent concept to elucidate such a reality.

Traditional modernity is based on hierarchies in development, expressed in binaries such as North/South, human/nature and other relations. Sustaining such power means, according to <u>Borresen et al., (2023)</u>, reproducing hierarchical relations via claims for development more generally, and current sustainable development in particular. The proposal of sustainable development overshadows claims of eco-development as the latter assumes a normative background to manage choices about production and consumption by the state in a way that reinforces living within natural and societal limits; an irrational proposition for the rational economic thinking of the 80s. On the contrary, sustaining the production and consumption of goods and services with limited or any reference to natural and social externalities has tended to triumph internationally.

Under these circumstances, economists, politicians and activist movements have started talking about degrowth in the industrialized North, as a response to the maladies of economic growth (Kallis & March, 2015; Schmelzer, 2015). Taking these developments into account, this thesis seeks to shed light on the wide-ranging conceptual background of sustainability and education, by placing it historically, and in conjunction with the often-conflicting narratives of late modernity. Considering this contradictory modern context, I have framed the following research questions:

1. How is education constituted in late modernity and specifically how is it implicated in the context of economic growth and climate change discourses?

2. a) How is ecological education manifest in two contemporary societies in the North: England and Greece?

b) and in what way is education realigning its practices with discourses on ecological limits, like degrowth, in the context of mitigating/adapting to climate change?

In my attempt to explore these questions, I will largely draw from a political ecology framework. To be more explicit, I will use the theoretical underpinnings of degrowth, post-development and posthuman theories to critically investigate how they might benefit ecological practices in education that bring about positive changes in how we deal with environmental and social justice issues. By examining how ecological sustainability is practised in some Northern education contexts, I will look at whether, how, and in what ways ecological transformations in education might constitute practices of resistance to rampant economism and environmental destruction, as suggested by the theoretical framework.

1.2. Theoretical and Methodological Approach

Taking this into account and introducing the study's theoretical underpinnings, reference to ecological limits connotates a sense of re-connection to earth-centric values, to the rhythms of the seasons and

slowness, and as a manifestation of this re-connection that is demanding of slowing down and be patient to grow in alignment with ecological frames. This also aligns with Hartmut Rosa's sociological criticism of social acceleration, and the lack of resonance in our connection to the world in modernity (Rosa, 2017). Thus, these problematisations will guide the theoretical and conceptual background of the research and provide a critical lens toward seeing education amid the climate crisis and sustainable development discourse.

To elucidate these (im)possibilities of decentering economic growth in education discourse, on the one hand, and think of alternatives, on the other, the methodology I have chosen consists of a Foucauldian critical discourse analysis of policy and curriculum texts on sustainability and education and a multiple-case study of ecological instances in education in England and Greece. Combining a post-structural Foucauldian theoretical framework with the empirical cases, I seek to shed light on the nuances and complex/conflicting manifestations of sustainability/ecology discourse in education in late modernity. Also, a Foucauldian lens is pertinent here, as it asks us to think of discourse as 'praxis' and as 'text' and consider the power relations between discursive practices (Foucault, 1971).

Based on the analysis presented above, I plan to conduct a discourse analysis of the sustainability strategy for education adopted by three major International Organisations - UNESCO, OECD, and The World Bank. Additionally, I will examine curriculum texts from England and Greece that relate to climate change and sustainability discourse. This will help us gain a better understanding of the prevalence of the sustainability discourse in education policy within these two European contexts.

Finally, my research methodology involves conducting a multiple case study of ecological practices in education. In that, I will present interview data from five educational organisations and their contributions to sustainability in education. The multiple-case study approach is used as a complementary method to discourse analysis. Its primary objective is to describe the tensions, alliances, practices, and overall possibilities of ecological perspectives in education. By bringing together discourse formations from various viewpoints and combining global and local agents, the approach can offer a holistic view of the subject matter.

1.3. Layout of the Thesis

This thesis comprises three sections and eight chapters. In Section One, made up of two chapters, I lay out the theoretical, conceptual, and historical elaborations of the research (Chapter Two). In Chapter Three, I expand on the theoretical framework and the empirical methodology of the research. Section Two, which consists of Chapters Four and Five, analyses discursively the sustainability policy for education in three major International Organisations and then describes 'negating' discourses stemming from different political projects to inform a more complete discursive background on sustainability in the North. In Section Three, I elaborate on the effect of sustainability and climate change discourse on primary education. More specifically, in Chapter Six, I conduct a critical discourse analysis of the curriculum guidelines for primary education in England and Greece. Following that, in Chapter Seven, I present the cases of the study, by conducting a within-case analysis, followed by a cross-case and general discussion of the findings from the cases. Finally, in Chapter Eight I present reflections on the research and areas where further research is needed.

CHAPTER TWO

SOCIETAL FORCES, AND THE ECONOMIC GROWTH NEXUS

2.0. Introduction

There is, in international intellectual circles, a consensus that Sustainable Development (SD) as a political project is characterised by political, technical and ideological ambivalence (T. Brown, 2016; Jickling, 1994). However, despite this discursive ambivalence, the term SD has come to dominate international policy agendas, especially after the (i) 2015 UN Declaration of Sustainable Development Goals, and (ii) the Paris Climate Agreement later the same year, to legally bind governments internationally to keep temperatures well below the 2°C. It could be argued that we are currently in a Sustainable Development era within the context of International Development, making climate a central issue in political negotiations and development policies.

Given this ambivalence of the SD discourse and the multitude of solutions to the environmental problems that come from different and often conflicting political, ideological, and technical agendas, the development of sustainable policies is characterised by complexity. To start untangling some of these complex ideas it is worth examining the relationship between the concepts of international development and sustainable development as historical and civilizational projects that are not separate from but entangled in the language of development.

In what follows a conceptual mapping of the interlinkages between the language of development, economic growth, and progress, will be discussed. This chapter sets out to examine these concepts by looking at the connections or ruptures between them placing them in a historical perspective. In doing so, this part of the thesis is divided into four parts: (1) I present the central ideas behind development as a political project and SD; (2) that focuses on the hegemonic project of modernization; (3) in which the unravelling of neo-liberal policies is explored; and (4) where there is a discussion of the turn to 'quality' discourses in development through SD and how all these are reflected in international education policies.

2.1. International Development and Sustainable Development: Tensions, Alliances, Discourses

To begin unravelling some of the historical departures of international development we need to start at the end of the Second World War and the idea of the construction of a post-war consensus. Despite the victory of Nazism in Europe and proclamations for peace, the era is marked by a continued Cold War between the East and the West which ignited low-intensity proxy wars in the East. At that time international development policies begin to take form at first as foreign aid for reconstructing Europe through the Marshall Plan. Around the 1960s and under the de-colonisation processes this aid was directed towards previous colonies which paved the way for the expansion of economic activities beyond the borders of nation-states. It also saw the problem of the newly developed nations as one that could be solved through the transformation of the economy and consequently of traditional social structures (Tabulawa, 2003). These activities were then institutionalised with the creation of Intergovernmental Organizations (IOs), especially the United Nations (1945), the World Bank and International Monetary Fund (IMF) after the end of the war, while the Organization for Economic Co-operation and Development (OECD) and the American foreign aid organisation, United States Agency for International Development (USAID), and European organisations like the Norwegian Agency for Development Co-operation (NORAD), that were founded in the 1960s were also crucial in the establishment of international development policies (Tabulawa, 2003).

With the advent of these Intergovernmental and Multilateral Organizations came the consolidation of international development as a field of economic and political interventions from the most powerful countries directed towards the less powerful ones. As King notes "these processes identified a series of goals and targets, including in education, that were time-bound and circumscribed in their range and coverage" (King, 2007, p. 377). These were initiated in the form of International Development Targets (IDTs) which put international development on track guided by measuring and comparing tools. In this context, measuring economic performance became a crucial tool for comparison. This, along with setting targets, goals, and promoting the political ideals of social democracy and free markets, formed a new landscape that not only influenced but also dominated the international policy arena (Suliman & Weber, 2019).

So far, it could be argued that international development is a political and economic project that originated in the North and aspired to expand worldwide by intervening in nation-building processes in the form of aid, consultancy, and expertise. It is worth looking at how these activities materialised in the process of building a post-was consensus.

Conceptually international development came to be associated with the concept of progress in terms of economic, political, and social developments, that would bring about positive changes in people's lives. The driving force behind this kind of welfare politics was modernisation, a concept greatly used in political economic science to characterise the era of mainly Western-driven political, economic, and cultural expansion globally. According to (Gilman, 2004), "modernization theory represents the most explicit and systematic blueprint ever created by Americans for reshaping foreign societies" (p. 5).

More recently, Gilman (2018) argues that "modernization never dies" as it is deeply embedded in economic growth, thus offering an everlasting "metahistorical narrative" (p. 134), which can be described as

...the existence of a common and essential pattern of development, defined by progress in technology, military, and bureaucratic institutions, and the political and social structure. Modernization theory asserts that whereas traditional societies are inward looking, inert, passive toward nature, superstitious, fearful of change, and economically simple, modern societies are cosmopolitan, mobile, controlling of the environment, secular, welcoming of change, and characterized by a complex division of labor. Led by technocrats, modernization promises that scientific rationalism in the industrial, social, and political spheres will allow countries to converge on what amounts to an idealized version of what liberals believed the United States was on the verge of attaining in the postwar years: a harmonious, democratic, egalitarian welfare state (p. 133-134).

Based on this train of thought, my argument is that international development has been historically linked to the idea of economic growth after the Second World War, which mainly resulted from US policy interventions. Therefore, the primary objective of international development became the economy, and to some extent, the expansion of the economy. Hence, it's worth examining how the narrative of economic growth established its dominance in international politics by promoting the idea of progress and modernization. This has definitely affected society's connection with nature, as mentioned by Gilman (2018) earlier.

According to Schmelzer (2016), economic growth acts as a framing for policy, for shaping institutions and their social relations. The latter introduces the narrative of economic growth as a historically bound concept that only came to form a grand narrative from the 1950s onwards. Before that time Schmelzer (2016) notes that economic activity was characterised by "periodic ups and downs", "only expanding by an average of 0.05 per cent annually", compared to only the U.S annual growth rate which averaged 3.13 % between 1948-2021 shows the significance change in growth speed and volume (p.2). Today we cannot experience what life would be like with a 0.05 % growth rate expansion, but perhaps we can imagine that it would involve a much more frugal lifestyle that could resemble some

areas of the planet categorised as 'rural', 'underdeveloped', 'poor', 'marginalized', 'impoverished', or 'Third World'. This language is used to describe the state of non-capitalist growth, and although it sometimes may refer to a real lack of access to basic needs, like water, food and shelter, it is often used to compare areas and populations within a capitalist economy framework. Thus, social binaries and classifications, of the type 'rural', 'urban', 'rich', and 'poor', are produced in international development language that fixes the meaning of being developed or not according to specific market standards.

It was in the post-war/Cold War era that this expansionary growth paradigm came to formulate a common sense in the governments of Western Europe, North America, New Zealand, Australia and Canada. According to Schmelzer (2016), the post-war "key slogan became expand or die", which was accompanied by a shift from post-war "restoration" policies and discourse to the all-encompassing "progress" discourse and "rise of the economic expert", as the key figure in government and framing of political discourse from the 1950s onwards (p. 143). Schmelzer attributes the logic behind 'sustained economic growth' and its internationalisation logic to a group of economic experts from Western Europe and US governments (p. 144). This group known as the "Robert Hall Group" played an important part in constructing post-war Western economic thinking and according to Schmelzer US delegates promoted the moving away from the language of "restoration" to the language of "progress". The latter suggests that the US is the first to advance the idea of internal economic growth as the driving force of progress, while many Europeans maintained a moderate growth stance which the US thought of as "backwards and defensive" (p. 146). To this end, the group started its exclusively elite nation regular meetings under the presidency of Eisenhower and European delegates from "Britain, France, Italy, the US, West Germany, one Scandinavian expert (usually Denmark), and one from the Benelux countries (usually the Netherlands)" (p. 146). As Schmelzer notes, the group's missions were to avert pre-war economic stagnation at all costs, and those who were referred to as

"the growth generation" (p. 149) came to influence national government policies and formulate the economic discipline as a distinct and systematic knowledge system.

In summary, international development has been placed here in the historical conjuncture of post-war reconstruction as initiated by powerful states like the USA. International organisations and elite economic groups were engaged in the materialisation of this development ideology into concrete policy and economic framework; that of the economic growth narrative. Thus, growth is seen here as the organising principle behind international and domestic development emerging out of processes of building a postwar consensus on the role of the modern state and the market. In other words, economic growth in national and international development constructed a powerful block by bringing non-coercive power to the political reorientation of wider societal projects and to the extent that is conceived up until today a universal uncontested value linked to individual and societal progress.

2.1.1. Sustainable Development

Given the previous discussion, I now turn to look at the concept of Sustainable Development, and particularly how it connects to international development and/or how it might be different. For that, I place sustainability and its emergence in a historical context and explore its roots in the Western science of international development.

To start with, sustainability was originally used in environmental sciences to describe the conditions necessary for an ecosystem to thrive. It combines the perspectives of "conservationists" and "preservationists", the former adopting more anthropocentric views on nature and the latter believing in nature's intrinsic value (T. Brown, 2016). However, the term became more widespread after it was adopted by socio-economic sciences to express concern over environmental issues and to signify a critique of the socio-economic management of economic growth that had led to societal and

environmental unsustainability (T. Brown, 2016). In this sense, sustainability was introduced by various intellectual, political, and emancipatory circles as an open-ended and critical component.

Sustainability first appeared in the political debate around the 1970s within socio-ecological struggles and climate science circles (Schmelzer, 2016), but travelled on to the central political stage in the 2000s (T. Brown, 2016) and morphed into the concept of Sustainable Development (SD). Institutionally and internationally, SD entered the international development language officially in UN's Brundtland Report¹ which came to signify a form of global consensus around the urgency of the climate crisis, incorporating the social, economic, and cultural elements. The 2015 Sustainable Development Goals are the latest global development goals and represent, broadly, the institutionalised form of sustainability that officially sets targets and goals for the governance of resources internationally (Weber & Weber, 2020).

It could be argued at this point that sustainability as a social discourse rises at a point of multiple socioenvironmental crises, but also out of the intellectual stagnation of rationality and modernity. As many social theorists have argued around the 1980s and especially after the Fall of the Berlin Wall, there was a break in the former social contract that had advanced the capitalist state (Dale & Robertson, 2009), while the enunciation of postcolonial (Crossley & Tikly, 2004), post-development (Escobar, 2015), feminist (Gibson-Graham, 2005; Mies & Shiva, 1993) and counter-hegemonic globalisation (de Souza Santos, 2004) critical theories emphasised the need to re-narrate development. As new subjectivities emerge that require different forms of governance, including the Environment as a subject, Sustainable Development is presented as a management project that reflects this shift in discourse.

¹ The Brundtland Report or the report of the World Commission on Environment and Development (WCED, 1987) is considered the first Commission to put sustainable development discourse into the international political agendas with focus for the first time on the intertwining fields of economy, ecology and equity rather than viewing environmental problems from a solely scientific angle (Elliott J.A, 1994).

Raco (2005) argues that there is an overall ambiguity in recent decades about the practices and values of the previous growth-progress nexus, namely that its articulation as a concrete discourse has been ruptured. New subject formations call for a re-articulation of government techniques. Sustainability, as vague as it sounds, enters this debate and despite the multitude of positions from which to look at it, there is a common context in which it emerged and through which it evolves: the crisis. It emerged as a radical discourse to the social and environmental exploitation of the previous 'modernisation' years and as a new management technique of the post-modern era. It could also be argued that there is, in sustainability discourse, the element of emancipation (Gadotti, 2010b). This emancipatory orientation, many degrowthers argue (D'Alisa et al., 2015; Sekulova et al., 2013) has been compromised in the process of its institutionalisation and integration into the capitalist state and through the internationalisation of the capitalist state through international development, with its strong roots in economic growth theory.

Back to the historical overview of SD discourse, the hegemony of economic growth through international development will be first shaken by scientific reports on global warming and multiple interconnected socio-environmental protests. The 1970s marked this change in discourse as qualitative changes occurred in the language of international development within international organizations as well as in social protest. The OECD will introduce 'qualitative growth' as a way to ameliorate critiques of the economic growth model, while the World Bank shifted its focus from modernisation theory to what is known as the "basic needs approach" to development, with even NATO rebranding itself toward more environmentally friendly motif (Schmelzer, 2016, p. 271). However, the most fervent critique of modernisation through economic growth came from a band of OECD professionals best known as The Club of Rome and their report "Limits to Growth" (1974), which inaugurated public debate around the appropriateness of economic growth as a measure of progress. According to Schmelzer (2016), the club can be considered to have started developing its arguments as part of

internal struggles within the OECD, although their insights were not taken up by the official organisation's political goals. As Schmelzer argues, the Club of Rome's critique of growth was "fervently opposed by the Keynesian and neoclassical economists within the Economics Department and its influence on the longer-term evolution of the growth paradigm was rather limited" (p. 247). This is characteristic of international development's economic growth foundations that sustainability science and advocacy failed to overcome.

Sustainable development is thus seen as a continuity of international development and inaugurated in the 21st century as a discursive complex between sustainability's emancipation potential and economic sustainability. It is the response to the previous critique of infinite economic growth, a form of integrated systemic sustainability. It appears that sustainable development will be negated from its onset from within 'anti-utilitarian' intellectual circles that oppose the economic model of infinite economic model of infinite economic growth in international development (D'Alisa et al., 2015).

Notwithstanding the importance of the political and analytical differences between sustainability and SD, they are considered here as a break with the hegemony of economic growth in international development and following the onset of energy transition discourses from the 1970s onwards (T. Brown, 2016; Schmelzer, 2016). These are premised on the need for qualitative change in the management of individual and social life.

Gadotti shows the historical tensions and long debates around issues of global warming by taking us to the 1960s and Meadow's report on the "Limits to Growth", and going forward, to the early 2000s when the IPCC warned humanity of the emergent situation the Earth was under due to human activity of excessive economic growth. Gadotti puts the SD concept under question when coupled with capitalism, especially when capitalism is the model of rightful development. For Gadotti sustainability holds the possibility of transformation only when seen through humanist and planetary lenses as opposed to economical and national lenses. To this end, the concept of planetary awareness is pivotal for sustainability education:

Planetary awareness. Understanding that we are interdependent. The Earth is a single nation and we, the people on Earth, are its citizens. We don't need passports. Nowhere on the Earth should we be considered foreigners. Separating the world into the First World and Third World means dividing it so it can be ruled by the most powerful. This is a globalist division between the globalisers and the globalised, which is opposite to the process of planetarisation (Gadotti, 2008, p. 24).

In summary, some argue that sustainability has lost its power as an emancipatory discourse through institutionalisation. It has entered the language of targets, indicators and outcomes, leading to an extended economic development language (D'Alisa et al., 2015; Weber & Weber, 2020). However, sustainability as expressed through the worldviews of *planetarity* (Gadotti, 2008) is closer to an emancipatory politics of development that breaks with traditional economic growth-progress nexus. The following text explores the intricate relationship between economic growth and sustainability. It examines some of the fundamental principles of growth policies, the modern imaginary, GDP, and human capital theory, which have led to a connection with education.

2.2 Modernity, Modernization, GDP Economy and Human Capital - A Historical Perspective

In this section, I will look at the language that has consistently framed education, especially after the Second World War. In that, the concepts of modernity, modernisation, GDP, and human capital will be analysed under a historical prism and in their interrelatedness, through the process of 'economisation' of societal functions. The purpose of this analysis is to understand the complexity that frames these terms, their (dis)continuities and ruptures, and ultimately their position in another late modern discourse: that of sustainability and climate change. For Latour (2003), in that discontinuous context, "We have never been modern" or have we?

2.2.1 Modernity

Modernity is conceived here as a historical social imaginary construction that is premised on the ideas of progress, rationality, and the social contract. According to Dale & Robertson (2009), the modern state, the market and the citizen are the three interlocutors in the social contract which they negotiate through social democratic practices. This social structure has dominated the political and social imaginary since the post-WWII era. Education is a key mechanism of modernity where it not only reproduces the modern citizen but also assigns the role of expanding this imaginary to the rest of the world through the internationalisation of the Western educational model. This includes its objectives, purposes and methods, especially regarding the progress imaginary (Dale & Robertson, 2009, p. 116). At this point, we could say that education is both a mechanism of social reproduction and also a means of the expansion of modernity. It is worth now to take a closer look at what is meant by modernity, and how it is different from modernisation theory, which I shall explain below.

For Castoriadis (1993) modernity is "a social imaginary signification", which largely means a latent "instituting power" not through the exercise of "coercion" but through "a minimum of adherence" of society to a set of norms, behaviours and values (Castoriadis, 1993, pp. 103–104). Castoriadis places Reason, which is the foundation of the modern world, among the extra-social powers that define laws among God, ancestors, Nature etc. In heteronomous societies, historically the law is given by these extra-social powers.

In contrast, autonomous societies according to Castoriadis are those societies that are responsible for instituting their laws and those that can also challenge these laws. They differ from previous societies on the premise that the law is an open system, and open for everyone to know and to challenge. The source of the law is society itself. The law is an open-ended processual institution. According to him, there are no absolute autonomous societies but he considers the project of the creation of "social and

individual autonomy" to have been instigated in Ancient Greece and Western Europe (Renaissance, Enlightenment) (Castoriadis, 1993, p. 106). I will not go further to discuss the origins of modern rationale, but I will keep in this analysis the origins in this historical conjuncture that saw Western modern political thought as a democratic and open-ended practice, at least in its idealised form. It is worth noting at this point that both in Ancient Greece and in the creation of the modern state (notwithstanding their differences) their common source of institution is primarily and explicitly free male citizens. Thus, with the exclusion of women, indigenous and other agents, modernity is the story of Western-origin free Men or their part of the story. Critical post-development, feminist and postcolonial studies emphasise this inequality in the storytelling (de Souza Santos, 2004; Escobar, 2015; Mies, 2006). Nonetheless, modernity is conceived here as a primarily political venture, where citizens were expected to have an active role in the decisions (democracy) of the city/demos/polis/state, and thus it could be argued is a social-participatory process.

Having put modernity on a historical perspective as a set of processes that allowed for politics in a social context to flourish, let us now turn to modernisation as the process of universalising these ideas of autonomous democratic societies coupled with economic growth. I will not go further to develop a comprehensive historical analysis of the passage from modernity to modernisation, but instead I will focus on the post-WWII years, where they are conceived as the modernisation years through industrialisation in the North. I proceed to the distinction between modernity and modernisation, to show that in the theory of modernisation economic growth is the prerequisite for democratisation, while in imagined modernity was the direct political participation of citizens, the politics. Put simply, the economy prevails over the political (the making of active citizens).

International development policies, around the 1950s and 1960s, spread the modernisation theory of development to the world (Tabulawa, 2003). According to the latter, the Eurocentric idea of

modernisation has two basic tenants, that of "capitalism" and of "liberal democracy", which were thought of as inseparable and consequential (p.13). The system of "capitalist democracy", based on Rostow's economic theory of development, assumed that societies would grow into liberal democracies given they had grown their economic base sufficiently (Tabulawa, 2003). Modernisation theory became the basic developmental strategy of the US government and foreign aid policy including the World Bank and OECD domestically and internationally (Schmelzer, 2016; Tabulawa, 2003). For example, Wanderley and Barros, (2020) show how a development project "The Alliance for Progress" launched in 1961 by US President J.F. Kennedy, utilised modernisation theory to advance capitalist development in Latin America, while at the same time containing the spread of Communism after the Cuban Revolution. In that, the widely influential work of Walt Whitman Rostow, *The Stages of Economic Growth: A Non-Communist Manifesto*, (Rostow, 1960) could not be excluded from this narrative, along with the characterisation of his main idea of "modernisation theory" which was inextricable to economic growth and US welfarism as mainly a "bad idea" (Gilman, 2018, p. 133).

2.2.2. Economic Growth

So far, we could argue that modernity expressed the idea of political representation in autonomous societies and modernisation in the post-war era the ideology of capitalist economic growth. For that, it is worth looking at economic growth as a historical construct too. Schmelzer (2016) analyses the idea of economic growth by utilising a post-development cultural theory of the power and knowledge complex. According to him, the second half of the 20th Century marks the time in recent history when economic growth came to be the standard measurement for social well-being at least in the post-war industrialised North. Economic growth, according to the author, is not to be taken as a "self-evident goal of industrialised countries" but rather as "the result of a very specific ensemble of discourses, economic theory, and statistical standards" (Schmelzer, 2016, p.10).

The term 'growth paradigm' was first introduced by ecological economist Herman Daly in 1972 to characterize the pre-analytic vision of mainstream economists that justified their belief in unlimited growth, and the term has since been employed rather vaguely by ecologists, political scientists, and in public discourse to describe the worldview associated with growthmanship (ibid, p.11).

Crucial to the universalising of the idea of economic growth was the development of Gross Domestic Product (GDP) as a measurement of economic success. Schmelzer (2016), in historicising the rise of the economic paradigm, notes that GDP measurement was an instrument that was first used in the Second World War to manage the Allies' economies against fascism and later in the Cold War era to compare capitalism against communism's capacity to yield more material output (p. 14). GDP as an instrument can thus be described as a very specialised tool that was invented in wartime to be utilized for a very narrow set of reasons around competitive material output and comparisons. After this time of war, the economic paradigm accelerated socioeconomic activity, transport, agricultural production, water use and so on but also accelerated the collapse of earth, air and marine ecosystems, a problematique of the growth paradigm which was largely silenced at least until the 1970s.

Behind the invention of GDP, there is a certain agent, namely the figure of the economist. The latter occupied crucial roles in the government of post-war nations, something that started during the Great Depression (1933), which can also be seen as an opportunity for the rise and establishment of development economics. Their use of statistical expertise, predictive models and economic measurements informed an economic ideology of unlimited growth in the industrialised world. In turn, economic growth formed a common ground for national competition and a goal of state government (Schmelzer, 2016, p. 23). Fourcade and Healy, (2017) point to the way modern states and markets produce "classifications" as government mechanisms, which are seen as "judgments of essential worth" and ultimately connotate "an algorithmic decision making" (p. 287). This classification system boosted the economic growth model of government, according to Schmelzer (2016), an important break in political history occurred in the 1930s when economic discourse came

to substitute legal language so far used in international economic issues. Overall, the establishment and hegemony of economic language in most political and state activities transformed the meaning of policy and government. In that Schmelzer (2016) cites:

The growth discourse and the related privileged positions of technocratic power of economic experts thus constructed and reinforced the primacy of the economy over politics. It furthered a process of continued economization, in which economic logics came to pervade other spheres of social life, reducing their autonomous logics to instrumental rationality (p.23).

In that sense, already the political sense of modernity as the institution of laws by society had begun to give way to economic modernisation, and the subsequent institution of societal laws to the figure of the technocrat. For this to occur, other non-economic discourses had to be silenced or devalued. Schmelzer, (2016) and Weber (2020) point to the importance of not only critically analysing the power structures of international organisations and development institutions, but also being attentive to the pivotal role that the omission or silencing of counter-hegemonic voices can play in constructing hegemonic discourses. This way, according to them, the subtle nexus between power and knowledge alliances and trade-offs come to inform a more in-depth analysis of the power structures in their making. The silencing of the story of the limits to material use, for example, and the emergence of climate change due to the growth model of the Western economies are the obscure parts of the story of development and growthmanship.

Next to economists, international organisations, like the OECD, advanced the story of economic growth in a universalising context and also infused a managerial ethos in areas like education internationally (Troehler, 2014). The story of international development is closely related to the story of the economic paradigm told by specific Western post-war victor nations. These 'elite' nations, also all members of the OECD, are the creators and reproducers of the story of economic development globally and the OECD according to Schmelzer (2016) is an international organisation that advanced

this agenda by constructing the economic growth consensus and legitimising it by claiming epistemic knowledge and promoted as the "truth seeker" (p. 28).

In fear of economic depression in Europe in 1953 and competition with Russia and Eastern European nations, the US pushed the idea of economic growth even further to suggest a "steady rate expansion" per year, which could be said to be the forerunner of the GDP economy. From that point onwards OECD's economists were preoccupied with making growth happen by employing market techniques, such as investment capital, exports, and increasing demand. Especially the latter, according to Schmelzer (2016), was met with the creation of new 'imagination' language in the economic discipline of "speeding up obsolescence" and "planned obsolescence" (p. 154). The first refers to the idea that "products should be artificially made obsolete through marketing techniques that made them wear off or become out of fashion more rapidly" (p.154) and the second is defined as "instilling in the buyer the desire to own something a little newer, a little better, a little sooner than is necessary" (cited in Adamson, 2003, Schmelzer, 2016, p. 154).

In summary, according to Schmelzer (2016), the first Ministerial meeting of the OECD that set for the first time a 9-year shared growth rate plan was a historical endeavour of Western powerful nations to: first, commit to long-term growth and policy goals, second, persuade the postcolonial world of the effectiveness of capitalism (especially in comparison to communism), third, giving meaning to the OECD by constructing the "imagined community of the West", fourth, making GDP growth inextricable to welfare, power and progress. (p. 187).

2.2.3. Human Capital

Drawing from the previous conceptual analysis on the ideas of modernity, modernization, and GDP economy, I now turn to the theory of human capital which is accompanied by modernisation theory in structuring the modern individual, especially through education. What I seek to emphasise here is
the relationship between education, economy, and work, through the theoretical assumptions of human capital that have largely dominated our imaginary of what education is for. In doing so, I explore how the individual is conceived in human capital, how education and economy are tied together in modernity, and changes in the knowledge economy era of the idea of education and work that has created the educational good (knowledge in a market sense). This analysis indicates how education, like many other sectors of social life, is becoming more and more geared towards economic growth.

Peers (2015) pertinently asks "What is 'Human' in Human Capital Theory" as he tries to elucidate the meta-theory and practices that constitute the subject human in an industrial vis á vis post-industrial historical context. Human capital resides in humanism, in the ideology that man is the centre of the universe. Nonetheless, as Peers (2015) argues, human and capital constitute two different values that are united to construct the human capital theory. This, in turn, is premised on the assumptions of the humanistic culture, which constructs education and economics accordingly. It is thus proclaimed here that Western modern education systems are founded on this cultural idea of humanism which comprises, from its roots, that economic and cultural elements are intertwined. Thus, the idea of education is inextricable to the economy of its epoch, and vice versa.

Marginson (2019), links human capital theory with the GDP economy when he argues that "in the pure and original form of the idea, higher education more or less automatically triggers private enrichment, career success and national economic growth" (Marginson, 2019, p. 287). The idea ideologically dominated the development years between the 1950s and 1970s and was fervently promoted internationally by the United Nations Educational, Social and Cultural Organisation (UNESCO 1968) and later the Organisation for Economic Cooperation and Development (OECD) (Marginson, 2019). The central idea behind human capital is that by investing in someone's skills

development his capacity to earn more, irrespective of his socio/cultural background, will be enhanced, something that proved to be wrong by the increase in the gap between earnings and the endurance of inherited social stratifications (Marginson, 2019).

GDP economics and human capital theory have dominated the modern imaginary of what is the good life and education. They do so by actively producing their theoretical underpinnings of explaining the social through econometric models, utilising universalism and linearity, which in turn fix the meaning of space and time in a way that aligns with human capital production.

Human capital theory operates as a single and universal lens. The use of the single exclusive lens rests on the dualistic proposition that there is only one possible truth about social phenomena, and that particular truth has absolute authority (Dow 1990, 2012). In this kind of social science, the researcher applies a fixed theoretical framework and linked methodology to a succession of empirical observations in different sites. The theory is seen as universally applicable to all sites. Obversely, the only phenomena that can be recognised in observation are those nominated in the template of the theory (Marginson, 2019, p. 291).

This is fundamentally an economic theory, which sees education as a form of investment which, in a specific linear time, will produce a maximum yield. It rests on Rostow's modernisation theory and neo-classical economic growth theory, only here the individual is the resource, education the factory, and knowledge the output which translates to capital gains. To better understand education through neo-classical economic theory as it is expressed through human capital, Peers (2015) draws on the connection made by economists between education and freedom. In essence, he quotes:

Essentially, economic writing on education argues for a human individual whose freedom to participate actively and contribute to society must be acquired.... According to this perspective, freedom is something to be purchased, and in addition, without the available private credit to do so, children will remain un-free (Peers, 2015, p. 58).

What human capital theorists thus assume for the individual is based on an economic logic of investment, competition, yield and freedom of choice. Humans are seen through a linear and universal lens and constituted at least in the post-war industrial period on the premises of sameness,

productivity, and competition. Education follows this economic structure by adopting in its core principles the economic model through tools that promote competition and productivity, for example via standardised tests, hierarchical grading systems, and knowledge subject rankings according to market demand and status of professions. There is no need to explain further how profoundly intertwined the idea of education and work in modernity is.

The industrial theory of human capital has in a postindustrial context been revamped, according to Peers (2015), with neurological and biological discourses that see human development as the combination of "a natural resource (the brain) with cultural practices" (p. 64). This way education becomes a field of multiple variables, and human capital is the outcome of the right control of variables that can yield the maximum profit for the family investment: the child. One such variable, according to Peers (2015), is parental skills. But what is worth focusing on here is the shift in discourse in human capital from the industrial to postindustrial era, and from a humanist approach (culture against nature) to the incorporation of nature (the human brain) into the educational factors. These changes reflect current debates on how wider environmental factors affect knowledge acquisition, including access to food and clean water.

In this historical shift, Peers (2015) suggests industrial values are made redundant, and so are ideas around development, progress, and linear productivity. On the micro-level for example he notices the shift in the gendered roles of the previous patriarchal family structure, which now equalizes the dynamics between the two sexes to match the market economy. In that sense "patriarchy does not necessarily cease but that power structure adapts to shifts in the labour market" (p. 67).

The shift in the discourse of human capital, and especially the incorporation of women in the official economy, along with the reorganisation of the nature-culture binary, are fundamental in understanding the economic growth-progress nexus and its continuity in the postindustrial sustainable development

context. As Peers (2015) pertinently notes, in industrial societies, humanity consisted primarily of the male subject while in the postindustrial societies, the inclusion of women in the economy does not imply the recognition of their inherent value but their subjugation to the market economy. The same could be argued for the incorporation of the subject nature (Castree, 2008).

...there is no systematic recognition that non-market labour has a value. Unless women can function economically in the same way as men, they have to be treated suspiciously and/or left out of the model. So women may still have to do what they used to do in the family, without remuneration, and earn even less acknowledgement than they did before (Peers, 2015, pp. 68–69).

What is pertinently intangible from the human capital theory to grasp, according to Peers (2015), is the family as a resource of naturalistic and biological production and reproduction and so is 'nature' in a similar fashion. He argues that "family is symbolic of a limitless natural resource" (p. 58). This inability to capture the depth and complexity of the human being in its multivariate relationships to other humans and nature makes the econometric model of development prone to fixing the human identity in an idealised machinic form, or to reduce the human to simple economic functions. Technological learning thus is made by making a market logic central to the education for the knowledge economy since can be easily measured in economic theory to become profitable (Robertson, 2015).

However, there is another element in the learning process that a market logic tends to occlude and that is the learning process itself. As Peers (2015) argues, learning is not directly a market exchange, as this would mean that the child holds ownership of the skills she is going to develop and exchange them for another thing (p. 71). On that occasion, there is, in education, the emancipatory potential to escape market logic. As knowledge becomes increasingly commoditised, especially with the rise of the knowledge economy and technology, education is also being treated as a product to be sold. As a result, education is losing much of its potential to be a tool for liberation and empowerment (Peers,

2015; Robertson & Dale, 2015). To an extent, this has been described by Becker, (1992) through *human capital* and the influence it had on shaping modern lifestyles, especially the lifestyles of women entering the workforce (p. 87). In his analysis, education becomes meaningful through human capital, as it constitutes a practical mechanism for increasing someone's earnings in late modernity. However, education seen through the theory of human capital has also been criticised for leading to "credentialism", a contemporary problem of the unfettered instrumentalisation of the educational process (Becker, 1992, p. 88). The point here remains the fact that human capital is an economic concept and its application to education ultimately leads to its economisation.

To recap, human capital education theory and its ensuing practices which have dominated both industrial and postindustrial education are premised on the economic thinking of the world, which fundamentally sees humans as an individualised, competitive source of production and consumption and frames humans in mathematical and econometric terms. The importance of human capital theory in understanding the progress-growth nexus is premised on the fact that human capital has become so embedded in modern thought that the assumed linearity of the relationship between education, work and earnings inhibits the development of any other alternative imaginary in education planning or the relationship between education and work (Marginson, 2019, p. 290) and I would add here the environment. The shifts that I have focused on in the postindustrial era, namely the role of women in the economy, the incorporation of the environment as a subject-to-be-governed (Blaser, 2010) and the knowledge-economy (Robertson, 2005), pose new questions for the governance of education and new opportunities to rethink education outside human capital. How is progress defined in this social context will determine the possibility of educational transformations and emergencies. Sustainability may have vaguely emerged to express this possibility. Before, though, turning to SD I will look at another important trend in the history of economic growth, namely neo-liberalism, which will also shed some light on the idea of market regulations of education and the environment.

2.3. Globalising Neoliberalism

GDP accounting, as discussed, is a measurement closely linked to welfare, where from the 1950s onwards, it came to signify the word 'development' in international policy as the annual growth rate of each country and thus globally legitimised. The economic and comparative construction of welfare or quality of life predominates international welfare policies and individual constructions of what it means to live with quality, which is represented by quantitative gains or 'having more'. However, this construct was shaken in the early 1970s as the question of quality over quantity gained ground in international development policy discourse. At the level of the rhetoric, the idea was that GDP which dominated national economic and social welfare measurements between the 1950s and 1970s, did not suffice to account for improved welfare. The reason for this was critiques deriving from feminist and ecological economics that pertinently argued that GDP fails to be inclusive of activities that improve welfare such as care work, education, and a clean environment (Schmelzer, 2016). The qualitative side of development that the GDP economy fails to capture as it only includes market output, was the central argument at that time. There was a general welfare state crisis (Fraser and Gordon, 1994) and a questioning of the meaning of modernity (Latour, 2003), as well as the immense contradictions of the neoliberal state that have been discussed to an extent by (Harvey, 2007, pp. 79-81) and which posed severe social cohesion threats to the modern political system in the form of the emergence of "authoritarian populism" and "nationalism" (p. 81).

Another crucial historical event that will pose questions to the common sense of "modernity", "progress" and "liberal democracy" is the scientific articulation of global warming vis á vis industrial economic activities. The Club of Rome (1968)² which I introduced earlier is a good example of crossdisciplinary research of human/environment interactions that gained serious public and media attention, through their renowned report "The Limits to Growth" (1974). In the report, researchers from both the social and natural sciences link economic growth to environmental crisis. Although greenhouse emissions were not a discovery for the scientific community, it is the first time that humans were presented as a major geological force, challenging the whole modern idea of progress as industrial production, the culture/nature divide and affected individual disciplines as well, both in social and natural sciences. Mario Blaser (2010) pertinently juxtaposes the change in optimism about the future in two powerful discourses. He compares the 1949 Truman's inaugural speech, in which the postWW2 US President valorized "progress" and economic growth for all, to that of the 1987 World's Commission on the Environment and Development declaration (Our Common Future, or Brundtland Report), in which the future of society is presented rather ominous and risk intensive. In that Blaser (2010) traces a narrative shift from "modernity" that assumed a linear techno-economic progress for all, to "globalization", in which social, economic and environmental risks are interconnected and transcend modern technical and political boundaries (Blaser, 2010, p. 88). Discourses around "interlocking crisis" are evident throughout the Brundtland Report, which for the first-time connect economic growth, technology, ecology and society at a global political level.

In this global context the ideology of neo-liberalism will unravel as the response to the multiple critiques of the economic growth model, which have started since the 1970s (Schmelzer, 2016). Neo-liberalism as a project derived from these social historical transformations of the industrial capitalist-modern state, which comprised the demystification of the emancipation through mainly the gradual

² Founded in 1968 and consisted of joined knowledge of industrialists, environmental scientists (Donatella Meadows), economists and politicians. Could be considered a first attempt to cross-disciplinary research on the future of a humanity under crisis.

fall of communist regime and subsequent discourses around the end of history, which led to global market agreements and establishment of the World Trade Organisation (WTO), North American Free Trade Agreement (NAFTA) and other market-led organisations. No other system of economic and political thought has managed, according to Plehwe and Slobodian (2020), to instigate such a longlasting reign internationally. The latter, claim that the longevity of neoliberalism rests upon the way "neoliberal core ideas have made inroads and been absorbed by competing worldviews" (ibid, p. 11). Thus, individualism, consumerism and competition could be, for example, absorbed by either the right or left, creating "progressive and conservative fusions" of neoliberalism, leaving, though, the core ideas of selfishness and competition intact (Plehwe & Slobodian, 2020, p. 11). However complex neoliberalism may be, it is evident that its spread is accompanied by social cannibalism; it constitutes an all against all mindset, which ramps up run away capitalism. This elasticity and absorbedness can be observed also in economic growth discourse. For example, the renewed economic growth impetus shifted its discourse toward qualitative growth (Schmelzer, 2016), technological innovation, and future valorization mixed with market management techniques (Dale & Robertson, 2009, p. 113). The latter also emphasise the change and reorganisation of the space in governance, where the national will subside to the global, following deregulated global market demands that actively produced a state of globalising neo-liberalism.

According to Dale and Robertson (2009), the state has been under constant re-construction, in the context of a general re-organisation of the social contract, which is a part of and which is coming to an end as we know it. This is mainly because of the crisis of modern narratives and the disjunction between their "regulation" and "emancipation" double promise, with the last remaining predominantly unfulfilled (Fraser, 2013). In this context, the globalising of neo-liberalism has led to a discontinuity between capitalism, which is now perceived as globalised neo-liberalism and modernity, which sought to balance "regulation" and "emancipation", as the latter is left out of the equation and thus cancels

modernity's potential for liberation (Dale & Robertson, 2009). Dale and Robertson then place education in this historical interregnum and recognise it as a field of constant struggles between the two poles and their power dynamics.

One of the key topics for our discussion on the unravelling of neo-liberalism is the concept of the 'knowledge economy'. This refers to the extension of the economic growth imperative into the realm of knowledge production and distribution, as well as the globalization of neo-liberal forces such as markets into areas such as education, environmental governance, and care. In other words, the making of market services in areas that were once conceived as public goods or as Weber suggests, from the language of "rights" and "entitlements" to the language of "access" to privatised goods (Weber, 2014, p. 130), is considered the neo-liberal response to the crisis of the economic growth model.

Robertson (2005) theorises the knowledge-based economic project as an economic imaginary that has a longer history going back to the development of the post-Fordism school of thought in the 60s and 70s, the OECD's take on the concept of qualitative growth and the Word's Bank's "re-invention as a 'knowledge bank''. Education in the knowledge-based political economy is attributed according to Roberson's particular positivist characteristics by emphasising the development of scientific and technological advances and research whilst reducing the impact of other areas of education such as cultural, aesthetic and critical elements.

This new economic model builds on post-industrial economic ideas that saw the opportunity to reinvent economic capitalist growth through the incorporation into the main economic growth idea the knowledge sector. 'Innovation', 'new technologies', 'human capital' and 'enterprise dynamics' are considered by the OECD and the World Bank the four pillars of development of a knowledge-based economy and knowledge as well as education are being made into products that can be priced, statistically assessed and thus tradeable, whilst the subject of this economic discourse is the life-long learning citizen and knowledge worker. The Word Bank's Knowledge for Development (K4D) programme which was launched in 2004 adopts according to Robertson the same line of thought as the OECD, "knowledge as a means of growth". This growth takes on a neo-liberal nuance through the privileging of Western knowledge of science, technology and ICT learning coupled with liberal market expansion. According to Robertson, the WB's and OECD's approaches to knowledge economy were both based on the same human capital and "new growth theory" principles and have affected the way learning is being perceived through practices such as "learning by doing and learningto-learn" (Robertson, 2005, p. 162). At the level of policy and government, the knowledge-based economic discourse has managed to extend the use of statistics in policy by creating new statistics, such as on innovation, and new concepts such as "knowledge management", which nonetheless refers to the expansion of science/technology knowledge models (Godin, 2006). Jessop (2014), notices how the concept of knowledge-based economies was utilised by the EU in the 2000s to establish "a workfarist reorientation of social policy", which he links to the penetration of the "economic" in previously non-economic areas (p. 216). One of these areas could be argued is education as it reshapes the educational as a commodity-based process in all levels of education and creates a new market space by producing and thus increasing the demand for knowledge and skills. The relationship between growth and education is believed to be strengthened. It can be argued that the knowledge economy has reconstructed the meaning of both economy and knowledge through their interactions in market exchange.

Knowledge as mentioned before is the outcome, the final tradeable product of the process of learning. Learning cannot be measured with accuracy and thus escapes the market sphere, like care work (Peers, 2015). Knowledge thus is the necessary condition for a new knowledge market to exist and it refers to knowledge services and products that can be measured, ranked, and become marketised. Therefore, machine learning and techno-scientific knowledge products are primarily the kind of knowledge advanced and subsidized generously by the knowledge economy and international development agendas (Peers, 2015; Robertson, 2005). On the contrary cultural learning processes, like art, humanities and care do not fit the mathematical modelling of the traditional economic science, as explained in human capital and GDP economy, and thus are undervalued, silenced or in some cases enter market service as we shall see. According to Robertson (2005), the interaction between the economy and knowledge production favours the market economy as "education is now completely subordinated to the economy, like any other commodity-producing sector" (p. 13). The emancipatory potential of education is thus crushed by an all-pervasive instrumentalism and utilitarianism in education.

It is also worth noticing that education has become mostly quasi-market in neo-liberal terms which do not necessarily mean it is saleable all the way "but the crucial point is that they encouraged 'market-like' behaviour in an area that had previously been regulated by state intervention, with, presumably, an eye to the effect on the social contract." (Dale & Robertson, 2009, p. 120). This means that competition, individualism, and rankings between students and between schools are promoted as the most effective behaviour for educational success. The intervention of market law in society's institutions, like education according to Castoriadis would create the opposite of an autonomous society, which is a heteronomous society, which he calls "a society in which the *nomos*, the law, the institution, is given by another – *heteros*, in Greek." (Castoriadis, 1993, p. 104). In this case, the market is separate from the school populations, when education is still considered a 'public good' but still (the market) has an impact on its daily governance.

We could argue at this point that as neo-liberalism becomes globalised, it escapes the local and national boundaries and thus becomes more distant, and faceless for society. So do services that become neoliberal. Thus, to institute society according to markets means that society legitimises a distant entity to make its laws. On the contrary, the political and the social, which complement each other, are bound to the national and local scales, which is a major problematique for the 21st century institutions, including education (Dale & Robertson, 2009).

Diffused individualism as a neo-liberal method and ideology has entrenched environmental policy as well, by directing the responsibility for climate actions from the fossil fuel industry to the citizen, who is expected to act pro-environmentally, while fossil fuel corporations continue to extract oil and produce the biggest number of emissions globally (read Monbiot's column at The Guardian). The trend has affected environmental education which is taught in schools as "...individual acts of conservation that fail to challenge the structural power of fossil fuel consumption" (Eaton & Day, 2020, p. 457). The environmental issue this way is stripped of its political and social meaning and turned into an individual exercise, a postmodern self-improvement activity. Far from that, many sociological studies have shown that the environment can only be regarded as a collective issue and as such solutions should be shared in the collective in many cases the demise of collective solidarity is regarded as a cause of environmental destruction (Mies, 2014; Salleh, 2017). This is not to do away with any individual environmental action but to suggest that the individual actions are meaningful in a social context and the public realm. In this sense, it is not so important to enter a discussion on whether change derives from the individual or the collective but to recognise that both are meaningful in the public sphere. What is made public comes into emergence and becomes political, as the feminist movement has also shown. Thus, the environment needs to be treated as a vibrant political matter, open to public debate.

Another important point here is that neo-liberalism is fundamentally a fossil-fuel-powered ideology, no matter the rhetoric on the qualitative turn. This is a good example of how material and immaterial

categories are intra-acting in socio-political ideologies and are not separate as a binary view of the world would have us think. In that (Eaton & Day, 2020) argue that

Fossil fuels powered the development of the privatised spaces and transportation of the post-war suburbs, and petroleum products (fuel, plastics, synthetic fabrics, etc.) were marketed as essential to these domestic spaces of individual freedom. Fossil fuels are, thus, materially built into the fabric of neoliberalism and ideologically tied to the hegemonic notions of individual choice and freedom (p. 459).

In this section, I have tried to show that even though the environmental limits discourse entered the political debate from the early 1970s onwards a renewed faith in growth imaginary was instigated through the neo-liberal governments in the North of Reagan-Thatcher during the 1980s which integrated criticisms over fossil fuel consumption and growth-related issues into the discourse of qualitative growth that emphasised well-being (Schmelzer, 2016). The neoliberal propaganda of the kind "There is no alternative" greatly revolved around the necessity of petroleum products for wellbeing and a comfortable life (Eaton & Day, 2020, p. 463), obscuring the hazards of further fossil fuel extraction. In addition, the knowledge-based economy constructs renewed faith in markets to regulate society through technological development that promises techno-fixes in various socio-environmental problems. The framing of the environmental problem in education as personal, centred around technology and individualism, presents a significant obstacle to collective action to combat climate change. By emphasising personal responsibility, the focus is shifted away from collective efforts and structural changes that are necessary to address the issue effectively. This approach also fails to acknowledge the systemic nature of the problem, which requires coordinated and collaborative action at a larger scale. Therefore, it is crucial to recognise the limitations of an individualistic approach and prioritise collective action and structural changes in education policy and practice to effectively address the challenges posed by climate change. Globalising neo-liberalism, in terms of making global markets and making markets in sectors that were previously public or non-economical (Weber, 2014), largely 'saved' economic growth from collapse after its critique in the 1970s. I shall now turn to the idea of Sustainable Development and how entering this neo-liberal construct implicates socio-environmental struggles for just transitions.

2.4. The Oxymoron of Sustainable Development and the Counter-Argument of Degrowth

"In the first phase of the degrowth debate in the 1970s, the emphasis was on resource limits. In the second phase, starting in 2001, the driving force was the criticism of the hegemonic idea of 'sustainable development'. For economic anthropologist Serge Latouche, sustainable development was an oxymoron..." (D'Alisa et al., 2015, p. 2).

The above quotation summarises the critique that the term Sustainable Development (SD) has received from various social movements, ecological economists, critical sociologists and environmentalists (T. Brown, 2016; D'Alisa et al., 2015; Jickling & Wals, 2008; Weber & Weber, 2020), who largely argue for system change that is expressed with various counter-hegemonic discourses. These largely intend to substitute the knowledge-economy and neo-liberal globalisation, discourse and project, with an "ecology of knowledges" (de Souza Santos, 2004, p. 239), by adopting and bringing to the fore 'alternatives to development', which comprise "a pluriversal perspective from both the North and the South (Escobar, 2015).

As discussed, the economic growth optimism of the 1950s and 1960s had been replaced by a language of crises and problems. Two reports³ that the OECD drafted in 1972 reflect this uncertainty in the faith of GNP growth in relation to well-being, while it redirects political aims towards pursuing qualitative objectives. One of the authors of these reports was Cornelius Castoriadis, as we read in Schmelzer (2016), who from a Marxist position fervently criticised the prevalence of capitalism and

³ The Growth of Output, 1960–1980: Retrospect, Prospect and Problems of Policy (1970) and Expenditure Trends in OECD Countries, 1960–1980 (1972), according to Schmelzer (2016), reveal for the first time anxiety about the future of growth in the form of challenging the unquestionable so far Keynesian economic model, and by posing the issue of growth in well-being instead of mere quantitative economic growth.

liberal democracy in his lifework (p. 260). However, Schmelzer (2016) argues that these reports, including the Limits to Growth, come from elitist groups of experts who were trying to precipitate a process of global/planetary management from the top down, contrasting their composition and stance towards change from that of social movements. Commenting on the all-encompassing and universalising tactics of the OECD and Club of Rome nexus, Schmelzer (2016) cites:

Seen in the longer perspective, this debate was characterized by a fundamental ambivalence: while criticizing materialism, technocracy, the optimism of the focus on quantitative growth, and the disregard of ecological and social phenomena beyond the economic sphere, its outlook was still largely based on the same planning-euphoria and technocracy so characteristic of the cybernetic era. The OECD's insistence on the necessity of planning the "long term" had a marked effect on the governments in many Western European countries, who also started to mobilize social sciences as expertise for the long-term planning of the policy process (p. 266).

Linear time-oriented development and engineered policies, through the science turn in policy, are some of the effects of the operation of the OECD as an international organisation. In retrospect, it could be argued that although there were voices in the OECD that advocated for the dissociation of welfare from economic growth, the origins of the organisation in economism and the prevalence of economic and scientific discourse in the organisation limited its capacity to account for alternatives that escape the language of economism and forecasting. Even the environmental discourse enters the debate as an economic problem that needs market-based and scientific policy planning to be solved. The science-policy complex has been established as a must in global governance and is actively producing according to de Souza Santos (2004) a "monoculture", as it disregards other forms of social planning, while the science behind it serves neo-liberal globalization (p. 237). The problematique starts if someone questions the neutrality of techno-science and its capacity to drive socially just policy. Someone then could wonder to what extent these policies are fabricated, by whom and for what. In other words, should humanity bestow its decision-making and hope to forecast policies and social fabrication goals? Who decides these goals and what is the meta-theory behind these policy judgements?

Institutionally, the OECD played an important role over the years in constructing environmental problems internationally. OECD's market-oriented approach framed environmental protection as compatible with economic growth, although there was significant evidence to claim the exact opposite, namely that infinite economic growth was the cause of ecological unsustainability. On the contrary, the market was assigned with a new task; to stabilise environmental perils by creating new consumer markets, incentivising green technological innovation and creating a whole new green economy alongside, though, fossil fuel economy and classical economic theory, "a carbon colonialism" (Bachram, 2004). It could be argued at this point that OECD's attempt to reconcile unbridled economic growth with environmental protection is the precursor of Sustainable Development conceptually and technically. Nonetheless, the OECD was crucial in constructing the political and mental conditions for dealing with environmental perils internationally.

The passage from the 1970s ecological limits critiques the integration of the sustainability framework in global governance agendas that Weber & Weber (2020) call the "Ecological Modernization Theory". Their analysis of the SDGs framework maintains that the latter are configured as the continuation of the Modernization Theory only that now the environment is included in the analysis. The way though that according to them this inclusion is made in the SDGs is ideological since it suggests a very narrow relationship between development and ecology, with economic growth, progress, and productivity discourse from previous modernization to be continued unquestioned in SD governance. They base their argument drawing from Gramscian critical theory and hegemony studies, that the SDGs link to modernisation through their connection with the language of targets, goals, and the silencing of the means of implementation. What is more is that they are presented to the public debate as neutral, forging this way a false consensus around their legitimacy, especially when comes to means of implementation, when specific industrial discourse is favoured over others.

Heloise Weber (2014) looks at the continuities of the Millennium Development Goals and SDGs as measures of global governance that affect the empowerment of disadvantaged communities and nations even more through their "problematic, ahistorical, and non-relational understandings of poverty and development, and the ways in which they are closely tied into neoliberal political approaches to development" (p.130).

She particularly notices that the SDGs may be even more detrimental to the political representation of communities of struggle due to the language used in development agendas that put countries into a vicious circle of infinite competition between more developed, developed, and underdeveloped. This ranking system is characteristic of the politics of international development, and it is reproduced according to Weber in the SDGs via the language of "access to…" public goods, such as water, healthcare, and education. Weber maintains that what the language of goals does is substitute fundamental entitlements, which imply universal, unconditional, and not-for-profit access to basic goods, with goals of providing services for these goods in exchange for money (p. 131). Put simply, fundamental goods, public services, and social relations, are recognised as for-profit sectors and open to market mediation. "The constitutive role of the neoliberal politics of development has been a crucial aspect of ongoing conflicts and the creation of deprivation." (p. 134).

Weber, by referring to the establishment of market access and especially mediation processes between development imperative and markets, points to social struggles worldwide that underpin the contradictions and inequality of such development agendas. From Bolivia to France and other territories in both the Global North and South social movements and protests for free Water are a good example of the globalisation of neo-liberal policies over public services. Weber suggests that people are protesting worldwide against these policies and the substitution of redistributive politics for market logic. In effect, international development politics and agencies have been working on developing the markets globally and their poverty reduction schemes are regarded as a field of marketbased solutions that fail to account for the deprivation that comes due to the market approach and the political misrepresentation of deprived communities.

What is also highlighted by Weber (2017) is that by delinking poverty from development through modernisation theory attempts, the problem of poverty becomes a Malthusian problem of scarcity of resources, rather than system failure and political incapacity for redistribution and ethical allocation of resources and entitlements (p. 407). This, according to the latter, is exacerbated in international policy agendas and especially in the SDGs, which come as an unravelling of the neoliberal Structural Adjustment Programmes of the 1980s to the poverty reduction schemes of the World Bank and IMF to World Trade Organisation's Doha Development Agreement. These initiatives, Weber (2017) notes, "have foregrounded commercialization as the core organizing principle of development" (p. 408). The model of economic growth mingled with sustainable development has thus created a sustainable growth agenda in international policy which undoubtedly favours market solutions in public policy while downplaying redistributive and ecological policies.

2.5. Conclusions

Suliman & Weber (2019) in discussing precarity give us a historical analytical account of the limits of the term by a modernisation theory modus operandi. Precarity existed before post-Fordism and the passage to the neo-liberal era in the colonial relations of power and domination that generated global inequalities. Education, as it was implicated with modernisation theory and has been used by IOs to promote a growth and developmental agenda, needs to be seen through these lenses as well as being implicated in colonial processes of hegemonic development. The remedy and cure to the suffering that these power relations have caused to people and the planet around the world, Suliman and Weber (2019) suggest are "relations of solidarity" that can reinvent and reactivate society's empowerment (p. 528). Indubitably, the protection of the global commons is a goal to be taken up by the whole of humanity and can provide a common framework for meaningful action in diverse areas of social enterprise. Education is one of these areas that can facilitate such attitudes through its power to construct visions of the world and bring people together. For this to happen one of the main goals for education today would be to enhance its capacity for collectivity by reducing its individualising and materialist tensions as many have argued. An education that is based on the premises of the counterhegemonic discourses of the pluriverse as mentioned before, could re-institute a humanity that is fundamentally social, ecological and sustainable and I am to explore enablers, as well as constraints, towards this kind of education, an eco-logical education.

One fundamental reflection on the contradiction of the vision for a transformative education for sustainability or ecopedagogy and current claims of the education for sustainable development by international organisations (e.g., OECD) is the connection of education to the marketplace. Education's potential for social and ecological transformations is hampered to an extent when is considered an indicator of monetary output (the more educated one is, the better job she will get and the more money she will make) and a measure of GDP growth. For example, a market economy turns educational practice and theory into commodities and measurable targets. In contrast, in a degrowth theoretical context, education should generate democratic values and ways of being in harmony with others and with life on Earth. Indicatively, education's connection with the market economy should be discussed and analysed within a transformative education policy for climate change. Innovative ways of placing and valuing education outside the market economy and the language of competition, productivity, effectiveness, and linearity should also be explored within the climate change framework.

CHAPTER THREE

CONCEPTUAL AND METHODOLOGICAL FRAMINGS

3.0. Introduction

I begin this chapter by asking the question: what does it mean to be critical? This is a question of significance for this thesis, and for the educational activity more generally. Being critical is ordinarily asked for in education without referring to the heaviness and commitment that this philosophical task entails. I use the term philosophical because I place it historically within the realm of philosophical reflection on the self and others (Foucault, 2002, 2011). To be critical is primarily the labour of reflexivity upon your condition as a human and towards your relationship with others. It is in this sense that I use the term critical thinking which draws its insights from a Foucauldian perspective; as the trace of rational thinking in the human subject that marks its place in history and reflects upon it (Besley, 2015). According to Besley (2015), the importance of being critical in education is because "education as a practice and as a discipline is often described as finding oneself a process of self-definition and self-transformation that takes place through reading, writing, and thinking about the works of others" (p. 1438). This mode of reflexivity is related to an understanding of meanings, places, people and systems through making connections between historical events and human practices that convey meaning about us and others. This process is both deeply affective and cognitive and requires dedication to the task of seeking the truth. To wonder is to be critical.

At this point, transformation could be said to be the outcome of critical thinking, as it is expected the subject is transformed in the process. To be critical is to be able to reflect upon and change oneself and one's environment using theoretical and other conceptual resources that make visible the properties and relations of structures and subjects. In sum, criticality provides education with a transformative meaning. For this thesis the tracing of qualitative change is important, and so is a critical reflection on the emergence of, and interplay between, the discourses of education, environment, climate change and sustainability. In what follows, I explicate the theoretical and methodological framework of this thesis, which is divided into a series of parts. In the first half, I set out the ontoepistemological background of the research, which is based on a post-structural and especially Foucauldian discourse analysis; in the second half, I outline my approach to the empirical research which draws from case study research.

3.1. Ontological and Epistemological Considerations

I shall start by contextualising the study ontologically and epistemologically, emphasising that these two categories often overlap, and are not completely distinct, as feminist, poststructuralist and posthuman studies have shown by the term "onto-epistemologies" (Hughes & Lury, 2013; Latour, 2003; Mies & Shiva, 1993). An onto-epistemology draws largely from post-structuralist, feminist and posthumanist literature and is defined as an attempt to break the binaries created by a Cartesian epistemology, between that of subject/object, meaning/matter, and ontology/epistemology. In degrowth activist literature there is also the term "ontological politics" or performativity of sciences, which is the realisation that science and methods are not neutral, but they create policy and lifestyles (Ulrich Demmer & Agata Hummel, 2017). Considering the above frameworks, this thesis places the education narrative in the history of the development of the modern liberal/welfare state, analysing the data and developing its arguments based on a poststructuralist philosophical epistemology. Let me further explicate this theoretical framework by juxtaposing it with other social science epistemologies, namely positivism, interpretivism and critical theories. We could say that the main differences between them, apart from the dichotomies that these theories generate as discussed above, is the matter of the possibility of 'objective knowledge' or representation. According to Travers, (2001) "positivism, interpretivism and realism all share the assumption that it is possible to obtain valid knowledge about the world and that the studies we write can represent social reality." (p.12). Poststructuralism, however, "questioned the idea that it is possible to represent the world unproblematically through texts." (ibid). In a similar vein, Besley (2015) argues that "poststructuralism encourages a critical history through a re-emphasis on diachronic analyses, on the mutation, transformation, and discontinuity of structures...With genealogical narratives, questions of ontology become historized." (p. 1440). In that sense, it differs from other critical theories as it does not carry with it a fixed ontology of the world. For example, classical Marxist theoretical frameworks would do so, by reading the world through class struggles. This does not mean, though, that this framework is not attentive to the exclusions that discourses generate that might prohibit social transformations. We could argue poststructuralism invites us to leave behind *a-priori* ideological/political assumptions, and in that sense differs from critical discourse analysis (CDA), as the latter's focus is to be explicit about the underlying ideologies that frame discourses (Travers, 2001, p. 124). Another important difference with CDA is that the second focuses primarily on the linguistic, and secondarily on practices as discursive, whilst poststructuralist discourse analysis sees them in a unified, non-hierarchical way (Fairclough, 2013). This list of differences is not exhaustive, and you can see a more detailed account in Fairclough (2013) coming from a CDA background.

It is useful at this point to clarify some ontological and epistemological notions of the Foucauldian theoretical framework to discourse that come from authors influenced by him, like Bruno Latour (2003) and Barad (2003). In that, Kendall and Wickham (1999) give us a detailed account of Latour's "symmetrical anthropology" and "anti-modernist" ontology. I will not analyse these concepts further as this would take up a whole chapter, but I will briefly mention some points that are important for constructing my methodological framework. For Latour, this approach to methodology entails primarily the "simultaneous analysis of humans and nonhumans" (Kendall, 1999a, p. 94), and in Foucault, we find the preoccupation with the mechanisms through which subjects become subjects (Foucault, 1995; Skinner, 2013; Foucault, 1988), without assigning hierarchical a-priori positions to any of these entities. This way of seeing social phenomena attempts to break the binaries between object/subject and the primacy of the subject. Following this, the second point in Latour's antimodern stance is seeing society as a network of symmetrical objects, without imposing again hierarchical positions and especially the primacy of society above all else (Kendall & Wickham, 1999, p. 94). Again, it accrues from the previous attempt to negate making distinctions between "knowledge, belief and science", or making judgements and searching for causal relations. (ibid, p.94). Instead, Latour, as well as Foucault, emphasises the careful description of mechanisms and events, their relations, and their exclusions. Lastly, as Kendall and Wickham (1999) argue, Latour's network theory "is an attempt to overcome the false division between the local and the global" (p.94).

Barad (2003) starts her account of why matter matters by criticising the overarching role that language came to play (cultural turn, linguistic turn, discursivity) in shaping ontology, and what is happening in the world. Barad uses the concept of performativity from a naturalist posthuman lens to elucidate how matter is indeed an active agent. For Barad (2003) performativity "…is a contestation of the unexamined habits of the mind that grant language and other forms of representation more power in determining our ontologies than they deserve" (p. 802). Barad's (2003) posthumanist performativity

(Barad, 2003) is a combination of both natural/cultural, human/non/human, and discursive/material organising of thought that asks to transcend from traditional representationalist assumptions.

In Barad's theory of 'agential cuts' and performative posthumanism, time and space do not pre-exist in the making of phenomena, whether social or natural, but time and space are performed/created throughout this open-ended process of unstoppable intra-action between entities/relata. In her own words:

This ongoing flow of agency through which "part" of the world makes itself differentially intelligible to another "part" of the world and through which local causal structures, boundaries, and properties are stabilized and destabilized does not take place in space and time but in the making of spacetime itself (p. 817).

This viewing of the materiality of the world takes a certain stance towards phenomena, as active and emergent. Space and time are becoming and emerge through this universal activity. "Temporality and spatiality emerge in the processual historicity" (ibid, p. 818). In that sense, local spaces are bound to constant reconfigurations and rearticulations that certain types of phenomena produce in them but there are no *inherent* boundaries as to what these phenomena will become, though they draw boundaries within the space. This Barad calls "the local condition of exteriority-within phenomena" (ibid, p. 815).

...the universe is agential intra-activity in its becoming. The primary ontological units are not "things" but phenomena—dynamic topological reconfigurings / entanglements /relationalities / (re)articulations. And the primary semantic units are not "words" but material-discursive practices through which boundaries are constituted. This dynamism is agency. Agency is not an attribute but the ongoing reconfigurings of the world (Barad, 2003, 818).

Discursive practices in Barad's work are boundary-making processes and not linguistic laws or exclusively referent to the spoken word. They are locally determinant but open-ended propositions that define what can be and what cannot be spoken.

Matter is referring to the materiality/materialization of phenomena, not to an inherent fixed property (ibid, p. 822).

We can trace Foucault in Barad's conceptions of discourse, emphasising the implicit and explicit processes/practices that allow certain phenomena and power relations to arise. In education, this methodological schema of analysing the practices/discourses of organisations and individual subjects in education can help us reveal the relationships between objects that act as either enablers or constraints of sustainability. For example, Barad's posthumanism and especially her view on matter and how this matter intra-acts with our discourses which in turn generate different local events/phenomena, could help us gain a better understanding of the complex relationship between schools, environment and spacetime. Taking this analysis into account, we could put our agency to work to problematise rigid material configurations in schools and imagine education differently from a sustainability lens.

Applying the above methodologically means that the analysis does not prioritise a force, which is usually the global upon the local, but looks to highlight the way they work and interact. In this vein, you will find in this thesis the symmetrical, descriptive, and non-hierarchised investigation of discourses that derive from global and local forces and produce the subject of sustainability in education. As an example, Susan Robertson (2022), pertinently uses the term "vertical vision" to explain how ranking systems form technologies of control in universities delineating academic excellence. For this study, a horizontal vision is used to investigate various sustainability discourse and their intensities. In this regard, those discourses produced by global organisations, local institutions, and resisting discourses, will be described as events/cases of the materialisation of sustainability discourse in education. To better understand this spatial framework, I cite Barad who describes her agential theory in spaces:

It postulates a sense of "exteriority within," one that rejects the previous geometries and opens up a much larger space that is more appropriately thought of as a changing topology. More specifically, agential separability is a matter of exteriority within (material-discursive) phenomena. Hence, no priority is given to either materiality or discursivity (Barad, 2003, p. 825).

It could be argued at this point that the onus is on investigating these discourses in their materiality, how they emerge and are practised, and their relations to other discourses and entities. In doing so, this study uses Foucault's theoretical approach to discourse in producing an account of sustainability discourses in education. In what follows, I expand on the Foucauldian discourse analysis by highlighting some of Foucault's oeuvres in theory.

3.2. Foucauldian Critical Discourse Analysis

Foucault's work does not allow us to reach general conclusions about the content of modern life — the point is to show precisely how some event has its own specificity (Kendall & Wickham, 1999, p. 120).

A narrative discourse, according to Foucauldian theory, is most importantly productive in the sense that it produces the subject that it speaks of (Foucault, 1971). For example, statements and discourses of climate change produce the subject of sustainability, and so does the contested narrative of perpetual growth by Northerners, produced usually after economic crises, as has been discussed in Chapter One. Another important aspect of the Foucauldian discourse according to Kendall & Wickham (1999) is that "discourse is not only about language" (p. 35). They cite Ian Hunter (1989) in an unpublished paper, *Michel Foucault: Discourse versus Language*' which is worth reciting here to better understand the notion of Foucauldian discourse.

Foucault's reformulation of the concept of discourse derives from his attempts to provide histories of knowledge which are not histories of what men and women have thought. Foucault's histories are not histories of ideas, opinions or influences nor are they histories of the way in which economic, political and social contexts have shaped ideas or opinions. Rather they are reconstructions of the material conditions of thought or 'knowledges'. They represent an attempt to produce what Foucault calls an archaeology of the material conditions of thought/knowledges, conditions which are not reducible to the idea of 'consciousness' or the idea of 'mind'. (Hunter n.d., emphasis in original, cited in (Kendall, 1999b, p. 35).

Here we can see Foucault's attempt to break with traditional philosophies of the primacy of rational thinking and its vessel, the intellect subject, by putting the materiality of discourse to work. Discourse, in this sense, becomes material, contingent to exterior conditions that bring it to the surface, and thus not deriving specifically from a universal thinking mind. Thus, discourse is contingent on certain historical events that allow for specific discursive practices to emerge. The use of Foucauldian histories can provide us with a methodological framework for discourse analysis that attempts to do away with judgements and the use of general notions of universal knowledge. It is a challenging, though still worth pursuing methodology, as it can elucidate technologies of power, 'strangeness' and contingencies of events that otherwise would remain hidden. As Kendall and Wickham (1999) put it, a Foucauldian history is about "uncovering the *conditions of possibility* for a knowledge or a historical event", which suggests "that we need to describe the various bits and pieces that had to be in place to allow something else to be possible" without falling into the trap of thinking that this knowledge was essential or derived from some sort of historical progress (italics in original, p. 37).

In this sense, when we are talking about the sustainability discourse, we are looking for the historical conditions of possibility that have led to the emergence of this discourse in the 21st Century. By uncovering the conditions of possibility of sustainability, we are investigating the mechanisms, technologies, and practices, that produce it as a systematic policy discourse to the present. What is more, we are looking for its relation to other discourses, like degrowth, its exclusions, mutations, variations, and the power relations that it produces. Putting these to work in the educational institution, we can then start tracing some history of sustainability in the present lives of students/teachers, the mechanisms by which it is performed in schools, the kind of subjectivities it generates and how this discourse is producing technologies of the self and of well-being in schools.

The emphasis of Foucauldian discourse analysis then is on the material conditions of the existence of discourse, or on the technology - if you will, rather than on the idea of a universal subject. Put simply, what Foucault suggests is to stop 'overthinking' about 'thinking' and 'deeper meanings' and focus instead on the 'praxis', the doing that gradually gives form to possibilities (praxis including activities and language).

For Foucault, the critical element in doing discourse analysis is a "reversal-principle", in which the researcher distinguishes "...the forms of exclusion, limitation and appropriation" in discursive practices (Foucault, 1971, p. 24). Foucault's critical discourse analysis is akin to an architect's work: combining elements, delineating forms, and designing structures with an artistic twist. The Foucauldian method is, in a way, a framework for the analysis of the possibility of truth within specific limits. These limits define, in its historical moment and within a specific context, what can be said or not said, constructing thus a system of discursive rules to be followed thoroughly in knowledge production processes. It could be argued that it is a situated methodology. As Foucault observes:

It is always possible one could speak the truth in a void; one would only be in the true, however, if one obeyed the rules of some discursive "policy" which would have to be reactivated every time one spoke. Disciplines constitute a system of control in the production of discourse, fixing its limits through the action of an identity taking the form of a permanent reactivation of the rules (Foucault, 1971, p. 17).

In the above quotation, Foucault - during his inaugural lecture at the College de France about the social sciences - describes the meaning of discourse in the construction of individual science as a system of rules to be repeated (reactivated) by the scientific talking subject and as limits to discourse. Thus, we must first recognise that discourse sets limits to subjects, on the one hand, and it is a framing process, on the other. Arguably, then, discourse is a constraining process, but a way to analyse what is considered 'true' knowledge 'or 'truth' at a specific time. Most importantly is a process of political importance as it delineates the possibility of knowledge in its time and as would Barad argue, it's a

process of active agency. That is particularly important for education, seen as an enabler/constraint of scientific, religious, ethical, and other discourses.

Finally, on a much broader scale, we have to recognize the great cleavages in what one might call the social appropriation of discourse. Education may well be, as of right, the instrument whereby every individual, in a society like our own, can gain access to any kind of discourse. But we well know that in its distribution, in what it permits and in what it prevents, it follows the well-trodden battlelines of social conflict. Every educational system is a political means of maintaining or of modifying the appropriation of discourse, with the knowledge and the powers it carries with it (Foucault, 1971, p. 19).

Drawing from the above reading of education as a force of social appropriation of discourse, sustainability and climate change, discourses in education become the 'battleline of social conflict' between different agents. In this methodological approach, the sustainability discourse in education is analysed through the power relations it generates by noticing who speaks of sustainability, how this discourse is being appropriated, and its knowledge production mechanisms. However, doing a Foucauldian discourse analysis differs from other critical discourse analysis methodologies, as Foucault asks us to not think of causal relationships between events but rather to think of contingencies, of the idea that events may be linked together haphazardly or not linked at all (discontinuity).

When we describe an historical event as contingent, what we mean is that the emergence of that event was not necessary but was one possible result of a whole series of complex relations between other events. It takes far more intellectual effort to see these developments in terms of causes and effects than it does to accept them as contingencies...The problem is, most of us get into the habit of looking for causes. We need to break this habit in favor of the easier move of accepting them as contingencies (Kendall, 1999b, p. 4).

Staying within Foucault's "Orders of Discourse" (1971), he explicates his methodological approach to discourse as "ensembles of discursive events" and not as in structuralist or interpretivist approaches, and discourse as notions of "consciousness and continuity", "sign and structure" (p. 23). Let me explain this further. For Foucault, discourse is a series of events that are grounded in "chance, discontinuity and materiality" (ibid, p. 24). He seeks this way to free his approach to the discursive analysis of any appeal to universalism and the idea of an ideal knowing subject. Thus, for him, the fundamental task of discourse analysis is threefold: "to question our will to truth; to restore to discourse its character as an event; to abolish the sovereignty of the signifier" (p. 21). In beginning to unravel this task, he suggests four principles for the analysis of discourse which I will briefly mention. The first is "the principle of reversal", in which he asks us to be attentive to "the negative activity of the cutting-out and rarefaction of discourse", rather than focusing on its "positive role, such as author discipline..." and its continuity (p.22). Second is the "principle of discontinuity", where "discourse must be treated as a discontinuous activity, its different manifestations sometimes coming together, but just as easily unaware of, or excluding each other" (p22). Here Foucault refers to the discursive as a fundamentally grounded practice and not related to transcendental rationality (that which relates to non-physical, to an a priori signification). Third, "the principle of specificity" grounds discourse in the exercise of practices that make "the events of discourse find the principle of their regularity" (p. 22). Fourth, "the principle of exteriority" is about "taking the discourse itself, its appearance and its regularity" and "that we should look for its external conditions of existence, for that which gives rise to the chance series of these events and fixes its limits." (p.22). Taking these four principles into account then the emphasis is on events and the conditions of possibilities of existence. I shall utilise these two elements along with the four principles of discourse to discursively analyze policy documents, curriculum texts and websites for education for sustainability (see Chapters Five, Six and Seven).

Another important aspect of this methodological approach which also relates to my attentiveness to post-human ethics is the materiality of the discursive events. Following what Foucault refers to as "an incorporeal materialism" I place my analysis of educational discourses regarding sustainability as residing in places and coexisting with other discourses. To better understand this relation between material/immaterial it is worth citing Foucault to an extent:

If discourses are to be treated first as ensembles of discursive events, what status are we to accord this notion of event, so rarely taken into consideration by philosophers? Of course, an event is neither substance, nor accident, nor quality nor process; events are not corporeal. And yet, an event is certainly not immaterial; it takes effect, becomes effect, always on the level of materiality. Events have their place; they consist in relation to, coexistence with, dispersion of, the cross-checking accumulation and the selection of material elements; it occurs as an effect of, and in, material dispersion (Foucault, 1971, p. 23).

In summary, using events as analytical units rather than causal mechanisms, the materiality of discourse and the conditions of possibilities of existence are ways to see discourse through a Foucauldian lens. These open the space for seeing sustainability as an evolving, dynamic, and emergent discursive practice in education and its mechanisms.

To better understand how all these come together, it is worth looking at some theoretical tools that Foucault is using in producing histories of the present. Heikkinen et al. (1999), regard Foucault as "a historian of truth" (p.141). According to them his history of truth is based on his approach to the intertwined triangle of "subjectivity, power, knowledge" through which he examined specific truth production technologies. The basic element of using a Foucauldian approach to education enquiry then is to examine the truth-production technologies that constitute specific kinds of knowledge legible and legitimate; legible in the sense that they are clear in transmitting a specific knowledge and legitimate in the sense that they exercise power by being widely accepted and repeated. A set of problematisations arises as a way of thinking through Foucauldian discursive practices, according to Heikkinen et al. that can describe his meta-theoretical framework.

A Foucauldian historian of truth, in our sketch, is a person asking 'How?' in the middle of a 'What-Who-Why' triangle. S/he is trying to answer the following questions: what is the truth that 'can and must be thought? What is the field of knowledge in which the truth is produced? Who occupies the place of the truth-speaking subject? Why is that truth produced? How is the truth produced? What are its technologies? (Heikkinen et al., 1999, p. 149).

Following this line of thought, where are the truths of sustainability and climate change to be found in education? What institutions, practices and subjects produce this kind of knowledge? How is this knowledge transmitted and negotiated? These questions arise in the exploration of the possibility of transforming education toward a more sustainable institution or how this is materialised. One way to examine these questions is to discursively analyse curriculum texts and policy documents that can be considered the discourse of experts who exercise a certain control over a knowledge area. Curriculum can be seen in this regard as discursive practices that systematically form the object of sustainability in schools, and the meaning of modern sustainability. Policy texts are also considered written discourses that can reveal how the truth about a subject is constructed and how it forms a knowledge system by excluding other knowledges or subjects. Information about institutions on websites can also be useful in introducing an organisation's profile in the way it articulates its raison d' être and its practices. These three areas of discourse will be examined in this thesis where policy documents and curriculum analysis will be the primary source of finding ways in which sustainability education becomes or not a unified subject of knowledge, but asks: what are its technologies and who has the authority to formulate its construction in education?

3.2.1. Power/Knowledge

To begin with, power in Foucault's terms is a "process" not a "thing" and thus is always "incomplete" and prone to change (Kendall & Wickham, 1999, p.48-49). Also, for Foucault (1982) power is "productive" and "positive" not "negative", as Kendall and Wickham note (ibid). This derives from the always 'double relations' between what is sayable and what is visible, in the sense that discourse and materiality co-constitute each other in an ever-ending movement. The emphasis here is on movement because for Foucault power is productive and positive, in constant movement between and across different actors, institutions and forces. Power for Foucault is productive and is a relation between forces. Here it is worth citing him at some length to better comprehend what a Foucauldian notion of power is.

Obviously the bringing into play of power relations does not exclude the use of violence any more than it does the obtaining of consent; no doubt the exercise of power can never do without one or the other, often both at the same time. But even though consensus and violence are the instruments or the results, they do not constitute the principle or the basic nature of power. The exercise of power can produce as much acceptance as may be wished for: it can pile up the dead and shelter itself behind whatever threats it can imagine. In itself the exercise of power is not violence; nor is it a consent which, implicitly, is renewable. It is a total structure of actions brought to bear upon possible actions; it incites, it induces, it seduces, it makes easier or more difficult; in the extreme it constrains or forbids absolutely; it is nevertheless always a way of acting upon an acting subject or acting subjects by virtue of their acting or being capable of action. A set of actions upon other actions (Foucault, 1982, p. 789).

So far, it could be argued that discursive practices generate power relations, and that power is in constant movement and not possessed by any specific actor but rather exercised by actors upon other actors and so on. It is worth noting here that resistance is part of governance according to Foucault and that "resistance to power is part of the exercise of power (part of how it works)" (Kendall, 1999, p. 50). The emphasis of a Foucauldian analysis is to make visible how power works and how resistance works in their interrelationship. This use of the notion of power has two basic effects. First, it problematises the necessity of vanguard resistance to some universal idea of repressive power, as we said power is not possessed by anyone. Second, it allows for an understanding of power through the exercise of resistance, as "each force having the power to affect and be affected by other forces" in specific historical contexts (ibid, p. 50). This now takes us to the question of subjectivity.

3.2.2. Subjectivity

Foucault writes: "My objective ... has been to create a history of the different modes by which, in our culture, human beings are made subjects" (1982:208). Foucault is proposing the subject not as a producer, but as a product:

One has to dispense with the constituent subject, to get rid of the subject itself, that's to say, to arrive at an analysis which can account for the constitution of the subject within a historical framework. (1980c: 117) (Kendall, 1999, p. 52-53).

Theoretically, we need no longer depend (should we so choose) on 'the individual' as the origin of all things. Rather than think of the single figure 'individual' in different sites, we can think of different subject positions taken up in discourse, positions that can be and are contradictory and irrational. For a Foucauldian account of the subject, attention must be drawn to the ways in which power relations differentially position subjects in discourse, even when (perhaps especially when) this produces 'contradictory subjectivity' (Kendall, 1999, p. 53-54).

The framework of processes of subjectification is of particular interest for an analysis of sustainability

in education as it reflects sustainability's contradictory character, considering that is taken up by different subject positions, from diverse disciplines and institutions to individual lifestyle preferences. Metaphorically, by accepting contradictions, the 'modern' condition looks more like an imperfect, haphazard, unfinished structure that you can always add on, cut out or bridge new elements on it without exactly knowing the effects of these new additions.

For example, the complexity of coexisting human values, such as freedom and duty, shows that the free market and its opposition, the gift economy, are both impossible in absolute terms (Demmer & Hummel, 2017, p. 615). The same may apply to educational systems. If we say that education is based on complex human interactions that co-exist, such as self-interest and care for others, public and private education, or freedom of creation and systemic limitations, then we need a methodology of deconstructing modern dualisms, such as self-interest/altruism, North/South, developed/underdeveloped, gift/profit, technoscience/ecology, nature/culture. That is to create the

space for new realities in education research. In such a way, according to Demmel and Hummel (2017), deconstruction in degrowth activist research does not "oppose capitalism or growth but decenters it from the definition of our reality" (p. 616). Another discourse focuses on neutralising the political by smoothing it out with efficiency and effectiveness discourses. On the contrary, degrowth construes replace the notion of neoliberal *efficiency* with *sufficiency*. These are some contradictions that can be analysed in the discourse of sustainability and how they are worked out by educational institutions.

3.2.3. Science-Technology

Using Foucauldian discourse analysis entails a break with the idea that science is somehow a unique type of knowledge and that it is objective. Science and technology are treated as all other forms of knowledge, described as contingent on specific space-time contexts and specific human practices (discourse) and rules. The onus in this approach, then, is to describe the conditions that allow certain sets of scientific knowledge to emerge, i.e. in our case climate science and sustainability scientific discourses and not to explain what the underlying causes of sustainability discourses are. The Foucauldian approach urges us to be attentive to scientific essentialism and to the tacit knowledge and the power relations that allow for a specific form of scientific knowledge to become common knowledge and processes of discrediting other knowledge systems.

To be more specific, Kendall and Wickham (1999) argue that even scientific experiments include the human factor/actor, who always uses non-objective knowledge systems to form decisions, i.e. gossip, a scientist's personality, honesty and reputation, relations with other scientists, the prestige of the university etc.) (p. 72). Scientific knowledge seen this way is not at all a straightforward objective knowledge production process but a complex discursive formation that is affected by other discourses in the process of its making.

Could that be the case for climate scientists too? Following the above way of thinking, the practices that climate science uses are a mixture of economic, political, natural, and cultural claims to construct the climate in crisis emergency discourse. According to Latour though this is not enough you have to enroll others to your viewpoint (Kendall, 1999b, p. 77). Sustainability science is an excellent example of a discourse that has involved a wide range of stakeholders, including big companies, universities, schools, governments, automobile industries, and the food industry. Sustainability is becoming more widely recognised, and it has taken shape as a systematic and systemic policy discourse. However, its specific context and content are still highly controversial and not well understood. This makes it an interesting subject to study, particularly in a Northern context where it coexists with economic discourses and modern subjectivity objectives that often collide with sustainability policies.

3.3. Narrating Sustainability in Case Studies.

Having laid out the Foucauldian post-structural theoretical framework of the research, I turn to the way this enquiry into policies and pedagogies of environmental sustainability is constructed methodologically. Overall, the methodology of the study is a qualitative multiple-case study of discourses around environmental sustainability in education policies and practices.

Following the Foucauldian grounding of discourse in a specific historical context and the existence of power relations, in the introductory Chapter and Chapter 2 of the thesis I have presented a brief history of sustainability's contradictory discourses, for example, modernity/modernisation/human capital/economic growth. Connected to this historical review of sustainability, the thesis then examines the historical conditions of this emergence/knowledge to the degree to which it is inscribed in a series of policy statements of UNESCO, OECD, and the World Bank (Chapter 4). I then investigate its effect on education in case studies and how it is performed in curriculum texts and some
educational institutions in England and Greece (Chapters 7 & 8). In what follows, I explicate the empirical methods of the study.

3.3.1. Multi-Case Study

To elucidate this hopeful and eco-logical aspect of educational projects, I will use a multi-case study research methodology, where I explore the multiple ways sustainability and ecology can penetrate everyday education practices and policies. Following the Foucauldian conception of the government of the self and 'governmentality' of life through everyday practices (Foucault, 2011; Foucault & Foucault, 2000), my purpose was to see how education can be a place of social experimentation and transformation, or as (Posocco, 2017) put it "What difference, if any, does it make to appeal to the ordinary and every day, the situated and always-already-in-relation, the emergent and the quasi-event?" (p. 177). What are then some events in education that can extend lifeforms and promote sustainability?

These questions led me to choose to conduct a multiple case study of the characteristics of ecopedagogies performed in education settings, from early years education to primary school level. How are various education methodologies, discourses, and practices employed to produce a different kind of discursively framed subjectivity less exploitative/disconnected/more caring/connected to socio-ecological contexts? And ultimately what kind of new subjectivities are hoped will be ideationally produced through these re-connections?

These kinds of questions in this educational research project are concerned with the creation of subjectivities through schooling and adjacent activities. The focus in this thesis is on the ideational framing of subjectivity, and not on its lived moments. This is because this thesis, in the end, and as a result of the limitations caused by COVID-19, used policy texts, along with curriculum analysis and interviews with case study schools. Although the research design employed doesn't allow for a full exploration of the kinds of new subjectivities produced in practice, for example, the possibilities within

the unofficial curriculum or the ways students negotiate and reframe meanings of sustainable development in opposition to what the school is telling them, it does allow for a theoretical exploration of the issue of subjectivity. This is seen in the selection of a theoretical sample for my empirical data collection. For example, school communities are cases of schools that aspire to produce an eco-aesthetic paradigm through for example 'co-operative management', 'student freedom to collective or individual organising' student assemblies', 'ecological classes' 'novel enframings of machine, animal, vegetable and human', 'reflecting upon race, class, gender and environmental action' and 'art education and environmental sustainability'. These categories are inspired by a degrowth theory of the economy that is attentive to concepts of socio-political organising to challenge modern time, place, and nature/culture divisions. In these cases, these concepts inform my data collection and analysis and are explored theoretically in section two.

Another important aspect of my research is the connections and/or collisions between ecological and technological enframings in education. The boundaries between these two discourses are becoming more and more blurred as we engage with sustainability literature, such that an exploration of the relationship of the two in the theory and within the cases is rendered pivotal. For example, how are contemporary computer-aided subjectivities reconciled with or collide with ecological perspectives in education? These are the kind of contradictory subjectivities that modern discourses produce, through power moves and government techniques. Immediately, themes of time-space and materials arise and their impact on pedagogies for environmental sustainability. In that exploration, the theory of posthumanism, as an invite to think transversally on human-machine-animal relations and contemporary art literature may be of use (Demos, 2013; Guattari, 1989).

In post-humanism, Nature and Machine both are given their agency (Quinn, 2013; Taylor, 2013) and although the Human is somehow decentralised from its apex, he/she is still very present with his

humanism in the world. Thus, through the posthuman lenses, we can better understand and uncover the entangled nature of spaces of nature-machine-human, as well as examine notions of time in a virtual learning future for example. The idea is to also put these two theories of degrowth and posthumanism in dialogue with each other to elucidate the meaning that notions, like productive time, progress, and embodiment, take under an eco-pedagogical context. Or, put another way, how do the (dis)connections of the self to certain materialities affect achieving sustainability and sustainable livelihoods? According to (Badmington, 2003) by "questioning humanism, posthumanism itselfbegins to build ways for being different in the future" (p. 23). Bearing this in mind, my research seeks to shed light on these future possibilities in education and how an ecologically framed education might look like.

3.3.2. Sampling, approaching participants and ethical considerations.

My methodological understanding of education and the cases/instances of learning that I have chosen for my empirical work is based on Robertson and Dale's (2014) methodological framework of analysing specific 'moments' of the educational as angles in on a specific set of processes unfolding in time-space. These according to the latter are "the moment of educational practice, the moment of education politics, the moment of the politics of education, and the moment of outcomes" (Robertson & Dale, 2014, p. 9). These moments that could also be described through the notion of Foucauldian event, as analysed above, are to be explored in International Organization's Sustainable Education policies, and more specifically in the policies of UNESCO, OECD, and the World Bank, and in situated grassroots cases of ecological moments in education institutions. Thus, according to Foucault's perspective on power as productive and positive, we end up with a balanced standpoint between global forces and local practices, which also exert their power in relation to global discourses. Applying the above in empirical research, this is based on a multiple-case study (Dorion, 2009; Eisenhardt, 1989; Yin, 1981) exploring how diverse educational programmes on sustainability can contribute to wider mitigation and adaptation policies on climate change. It involved engagement with a selected number of cases that represent sustainability education programmes, which can in turn inform a sustainability curriculum. Data included website searches of each organisation's profile and interviews with representatives of each organisation (each approximately 50 minutes long, recorded and transcribed).

Five cases of sustainability classes or instances of climate change education were selected from two European countries: England and Greece. The two cases in Greece are located at the primary school level, both are private, and both incorporate the environment into their mandate. In the UK, one case is a primary school in Cambridge, England, with a key curriculum focus on sustainability, while a further two cases are a gallery in Manchester collaborating with schools on education for sustainability, and the other a Cambridge-based organisation focusing on creativity, sustainability and artworks.

The researcher selected the cases by convenience, as she contacted schools and other organisations known to have sustainability classes and/or were interested in the subject. The researcher approached each organisation by email, explaining in plain and appropriate language the purpose and context of the study. The organisation then assigned a person from within the organisation where a final online interview took place. All participants were informed about the research project by participants' information sheets, and all consented to take part in the research.

Thus, it could be argued that the sampling approach is considered 'a theoretical sampling', where "the goal is...to choose cases which are likely to replicate or extend the emergent theory" and "in which the process of interest is transparently observable" (Eisenhardt, 1989, p. 537). However, the sampling technique aimed also for "maximum variation" (Gaus, 2017) in the cases, which can facilitate the

reporting of different characteristics in their organisation, thus making the report of any similarities even more valid and valuable (Dorion, 2009). For this, the researcher has decided to include in the study various educational institutions that seem to differ according to funding, management and/or pedagogy. In addition, the cases are comprised of two Greek and three English educational institutions, which reflect the researcher's background and complement the previous curriculum discourse analysis. Although no claims to generalizability stemming from the two countries can be made, as this would require a longer and perhaps different type of research, still the variation between countries adds up internal validity and strengthens the grounding of theory in the data.

This study, as mentioned earlier, does not make a clear distinction between global and local actors, but it fosters a dispersed viewpoint of agency, where local/global forces are represented as intertwined and networked and not strictly hierarchically. This is because, from a Foucauldian perspective, power is not possessed by one particular actor, but rather exercised by various actors in their specific sites and contexts. However, this is not to assume that all forces are equal, but also it reminds us to be wary of assigning power to social forces. One would wonder then how we can recognise power differentials. We can observe intensities that try to stall, confine, cut out, or reify, other discourses, instead of presenting one particular force as in possession of power. Also, in this analytical vein, the onus is more on describing power relations between forces through their interactions. In that sense, the focus is on the techniques that various locales use to exercise power and perhaps which technique is more intense and widespread.

In regards to ethical considerations, the research followed the British Educational Research Association's (BERA's) ethical guidelines including: ensuring participant's informed and voluntary consent prior to the research, informing them of their right to withdraw, of the transparency of the research and data storage, as well as their anonymity and confidentiality(<u>BERA, 2018, pp. 6–25</u>). In

this regard, anonymity was ensured for all individual participants, where organisations' original names were used, after obtaining consent from each organisation to do so. Finally, the researcher ensured that the research project was relevant and beneficial to the participant organisations. Having said this, the list of the participant schools/organisations is as follows:

- The venture of "The Little Tree that will become a Forest" school in Greece, a libertarian and Montessorian pedagogies early-years education venture.
- 2. "The School of Nature", is a private school in Greece that works according to an ancient Greek community organization model and promotes earth-centric values.
- 3. The University of Cambridge Primary School, a free school in England, promotes researchbased teaching and learning and has developed the "Agents of Change", a climate-themed art project.
- 4. The Whitworth Gallery, based in Manchester promotes sustainable development values through the arts.
- 5. Cambridge Curiosity and Imagination (CCI) is a Cambridge-based charity that promotes community-building and ecology through the arts.

The number of cases follows pertinent case study theory building literature (Eisenhardt, 1989).

3.3.3. Methods and Analysis

In my study, I have sought to collect in-depth qualitative data that can act as a core cartography of ecological enframings in education. Based on research questions and aims, my methodology is exploratory multiple case study research of ecopedagogies. Since we seek to explore the relationship between such pedagogical practice with degrowth and post-human theories, this research strategy is suitable as it has been used for theory-building and finding common themes between cases (Eisenhardt, 1989; Yin, 1981). Following Yin's case study research approach, and more specifically a case-comparison approach at the analysis level, there is as he elaborates "a chain evidence" that the researcher must follow throughout his/her research. This consists 'of the explicit citation of particular pieces of evidence' in each stage of the research (Yin, 1981, p. 63). Yin then distinguishes between the

stages of data collection, within-case analysis and cross-case analysis and reporting. Thus, so far at the initial stage of my thesis, I have elaborated on the conceptual framework, modernity, economic growth and global institutional forces. Also, the stage of the data collection, including the literature review and contextual analysis has informed my decision to include two cases that highlight the connection between arts and environmental education, as this theme emerged in the literature and from my understanding of the Guattarian eco-aesthetics that will be discussed further later. Along similar lines, ecological, degrowth and posthuman/feminist discourses will be presented following this chain of evidence as they pose theoretical events and discourses that have guided theoretically the empirical construction of the research. The multiple-case study will follow and supplement this chain of evidence and enhance the research empirically. In my study, the cross-case analysis is not the overarching goal and specific attention will be given to the unique character of each case. It accrues then that descriptions of individual cases will be conducted and within-case analysis. Eventually, a cross-case comparison will be conducted following what the data have to say (Dorion, 2009). Searching for cross-case patterns and themes can according to Eisenhardt, (1989) "improve the likelihood of accurate and reliable theory...and capture the novel findings that may exist in the data and in conjunction to the extant theory" (p. 541). Identifying patterns can be also used as a method of data analysis to recognize replicability in discursive practices and the systematization of discourses.

The type of data that have been collected are qualitative in-depth data of the experiences, perceptions and practices of participants in their pedagogical contexts. In that sense, a thick description of participants' ideas, feelings and motivations around ecopedagogies is advantageous for this kind of research. According to Yin (1981), case study researchers use a variety of methods to collect their data and there is not only one single source of data. I have collected my ethnographic data using verbal reports (interviews) and by conducting archival discourse analysis. More specifically, in my research I have conducted qualitative semi-structured interviews with adults (teachers and/or school managers)

about their organisations and their environmental pedagogies. The interviews include descriptions of the site's practices and teacher's perceptions/background/ ideas around ecological learning and pedagogical practices. Information from each site's website has also been utilised in telling each site's story, which is presented in section three at the within-case analysis level.

The cases are seen as instances/events in a Foucauldian sense of the emergence of sustainability discourses in education and are to be presented narratively. In addition, following Foucault's view of power and resistance, as explained above, instances of resisting discourses, such as alternative schools or degrowth, are also discussed as events in the weaving of the sustainability discourse in education.

3.3.4. The global, the national and the local (school) levels.

Regarding the scales of analysis, namely the global, national and local (school) levels, the research takes on a flexible/volatile, stance towards analysing these scales and their relationship to one another. To be more precise, there is in recent sociological research the position of 'policy mobilities and mutations' (McKenzie, 2012, p. 322). The authors, comparing policy mobility literature to the 1990s ideas around 'policy transfer', argue that the policies that are produced are more dispersed, prone to multiple translations, and whose origins are not always easily discernible. Thus, the boundaries between global-national-local scales are much more blurred than we give them credit for, and 'policy actors may be responding simultaneously to both regional and global policy-making networks', putting the traditional scales to work in simultaneity (ibid, p. 324).

In a similar vein, Robertson et al., (2002) discussing processes of globalization, argue that 'fixity, motion, scale and territolization' are all equally important categories in studying education and globalization (p. 476). In that they explicate that in the global context of constant movement of

material, ideas and people, the relationships between different scales are more diffuse and that 'shifting scales involves the active construction and reconstruction of territories for the purposes of governing' (p. 476). For example, Robertson (2005), shows how discourses of global knowledge economies are gradually shifting the way education is perceived at all scales as a determining factor for sustained economic growth. In this regard, processes of the standardisation of knowledge, of measurements of education (like OECD's PISA), and the translation of education into a tradeable service fixed into global agreements have reconstructed education globally (Komljenovic & Lee Robertson, 2017; Robertson, 2021). However, the latter notices the differences produced in discourse when translated ideas around economic growth occur, thus reconstructing its meaning through education (Robertson, 2005).

Following this line of thought, the thesis explores how ideas of sustainability and education are being constituted as a result of ongoing processes of transformation, mutation and reconstruction by global actors, like the WB, OECD and UNESCO, moving into national curriculums, and at the territorial level, taken up by local institutions. The idea around mobility and mutation of policies resonates with the theoretical underpinnings of this thesis, as they have been discussed in the methodology chapter. They especially resonate with the Foucauldian conception of events as units of analysis that emphasize the often-haphazard way an idea emerges, moves, mutates and takes on a discontinuous form.

In this light, sustainability discourses in education are considered against the backdrop of a multitude of political and economic discourses as they transform, extend, mutate, and reconstruct their meaning globally, nationally, and locally. Nonetheless, as McKenzie et al., (2015) suggest, sustainability is a global political term, susceptible to neoliberalisation due to its framing by particular market mechanisms/language. Taking this into account, the authors ask: 'Why do particular understandings of 'sustainability' get to move across nations and institutions, while other conceptualizations are

immobilized?' (p. 327). In this vein, I have taken the discourses/policies of sustainability of different actors, reflecting the global-national and local scales, and analysed them accordingly. For example, we could argue that more radical notions of sustainability that stem from degrowth and ecological economics have been immobilised in favour of 'green markets' language, a position that is discussed to an extent in Chapters 4 and 5.

Seeing that some sustainability policies are favoured and thus travel faster than others, we could suggest that the relationship between the three scales is both interconnected and uneven. As Dale (1999) has suggested, even 'though globalization represents a qualitative change in the nature of national- supra- national relations, this does not necessarily imply greater homogeneity of policy or practice in education' (p. 1). There are also vested interests and ideologies that should be taken into consideration when discussing globalising processes that constitute certain discourses immobile.

Frello's (2008) contribution to the discursivity of 'mobility' and 'immobility', 'place' and 'movement' here is enlightening and worth citing over. According to the latter

...mobility and immobility are both social constructs in the very basic sense that the very distinction between the two is discursively constituted....Mobility not only means different things in different circumstances: these meanings are discursively constituted and are themselves the products of, and produce, power relations (p. 29).

My contention is that the relationship between the scales agrees with Frello's argument; that there are power relations at work between spatial and imaginative entities which, to a certain degree, tend to favor global and mobility discourses. Or, in other words, globalisation produces both mobility and immobility. Localisation, though, also produces them through discourses. Their relationship considered here is based on discursive power and knowledge production. Nonetheless, local actors also have the power to reconstruct, translate and actively transform global discourses, like sustainability, although their ability to do so is contingent on other discourses at play and especially how certain knowledges are constructed on the global scale.

Reflecting the above, Chapters 4 and 5 narrate global sustainability discourses that stem from three major international organisations and from counter-hegemonic globalisation movements respectively. Chapter 6 looks at the Greek and English national curriculum regarding sustainability/climate change content and Chapter 7 explores sustainability and climate change discursive practices at the local level (schools and other organisations).

3.4. Conclusions

In this chapter, I have presented the theoretical and empirical framework of the research. First, I have explicated the grounding of the research on Foucauldian critical discourse analysis, as it structures the discursive analysis of sustainability in policy texts of International Organisations and in curriculum texts that will follow. It also informs the study theoretically and contextually, as it sees discourse as a discursive practice and thus seeks to be attentive to the linguistic as well as the praxis that creates discursive realities, and more specifically sustainability discourse. It also regards sustainability discourse as discourse and contradictory, within a complex relation to other conflicting and/or complementary discourses, such as modernity and progress.

Second, through this theoretical lens, the study seeks to problematise and investigate the concept of sustainability in education today how it is performed and practised in educational institutions, and the kind of subjectivities it produces in a Northern context. These kinds of questions led me to choose to conduct an empirical inquiry into contemporary practices of sustainability in educational institutions by practitioners. Thus, in the second part of this chapter, I have explicated the multiple-case study

framework and the methods I have used to gather data. Overall, the theoretical and empirical components that construct this thesis are seen as complementary and as 'emergent events' that have in their particularity contributed to the conception of the modern concept of sustainability and its applications in education.

SECTION 2

MULTILATERAL INSTITUTIONS-OPPOSITIONAL VOICES-PROGRAMMATIC INTERVENTIONS

CHAPTER FOUR GLOBALISING NEOLIBERALISM

4.0. Introduction

In the previous chapters, I laid out some historical contingencies associated with the growth model of development and its discursive formations. In this chapter, I look closer at these discourses through the policies and perspectives of those global actors who have set the bar for development policies, namely the United Nations Education, Scientific and Cultural Organization (UNESCO), the Organisation for Economic Co-operation and Development (OECD) and the World Bank (WB). This list is not exhaustive, and of course, there are more multilateral organisations that impact education policy and practice than those I have just referred to, such as the IMF and the WTO (<u>Robertson</u>, 2005). However, the length of this thesis does not allow their further exploration.

The OECD, WB and UNESCO are foregrounded as they are considered to have a more direct educational dimension to their mandates. In this regard, OECD, WB and UNESCO discourses around development and education will be analyzed in terms of their policy implications for education at a global level, and at the level of their association with the discourse of growthmanship, as discussed in the previous chapters. The global dimension that these organisations are affiliated with stems, first, from their international character, and second, from their key involvement in precipitating processes of globalisation from the late 1960s onwards. Globalisation here is conceived as "…the outcome of processes that involve real actors—economic and political—with real interests" (Robertson et al.,

2002, p. 472). This definition sits well with a Foucauldian discourse analysis on the materiality of discourse and its grounding in genealogy in particular socio-historical conjunctures and disciplines that gradually create the subjects of which they are speaking. In other words, what is under investigation here are these organisations' specific historical and disciplinary discourses and strategies for development through education, and their (dis)continuities in the present conjuncture of environmental and social crisis. I begin with the discourses in the official text and website resources of these organisations that make visible their disciplinary power and political foundations.

4.1. UNESCO- Global Citizenship-Quality Education through the SDGs Framework

It is a fact that sustainable development is the new narrative of international development brought to the forefront of international negotiations after a long time of scientific warnings on anthropogenic climate change and ecological collapse. The IPCC's reports were crucial to the realisation of the magnitude of the phenomenon of global warming. In that regard, the IPCC 20 years ago observed that:

New palaeoclimate analyses for the last 1,000 years over the Northern Hemisphere indicate that the magnitude of 20th century warming is likely to have been the largest of any century during this period. In addition, the 1990s are likely to have been the warmest decade of the millennium (IPCC, 2001, p. 101).

Since then, the discourse on climate change has led to significant international policy agreements, for example, the 2015 Sustainable Development Goals (SDGs), the Paris Agreement in the same year, the first internationally binding treaty that agreed on keeping the temperature rise well below the 2°C, and the more recent COP26 and COP27 in Glasgow and Egypt respectively, where the international community agreed on reduced subsidies for the coal industry but did not reach to an agreement regarding the complete divestment from coal (https://www.europarl.europa.eu/infographic/climate-negotiations-timeline/index_en.html#event-2021-11-13). The role of international organisations in

framing, implementing and monitoring the SDG's is considered crucial to the success of the SDG model. According to Misiaszek (2021), these organizations are the "Big Five" and include "UNESCO, World Bank, Organization for Economic Cooperation and Development (OECD), European Union (EU), and the International Labour Organization (ILO)" (Misiaszek, 2021, p. 3). In addition, these IOs are increasingly shaping the politics and policies of education in a globalised framework (Robertson & Dale, 2014) and under the SDG's global policy framework. Therefore, it is deemed pertinent to examine the discourse of sustainability in relation to education in a global policy framework that these organisations represent. As noted earlier, three of these organisations will be investigated. These are UNESCO, OECD and the World Bank and their discourses on education in a post-industrial, sustainable development framework of action.

This part of the thesis asks key concepts linked to the SDG agenda: global citizenship, transversal competencies, and quality education by UNESCO. To begin with, UNESCO is one of the UN bodies with a key mission in education and one of the international organisations founded in 1945 to promote peace and prosperity after WW2. Since then, the organisation has expanded the notion of the right to education worldwide by 'internationalizing the responsibility for education', especially through the Education For All (EFA) policy agenda (Robertson & Dale, 2014, pp. 156–157) and its educational statistics, favouring especially benchmarking and comparison tactics (Dale, 2005, p. 119).

Today, UNESCO fosters the SDGs as the discursive foundation for its 21st Century development path in education. The organisation has been promoting the UN Decade for Education for Sustainable Development (ESD) since 2005 and thus is considered one of the key organizations to have embedded sustainability in its discourse. UNESCO considers education to be "both a goal itself and a means for attaining all the other SDGs" (UNESCO, 2017, p. 1), while it especially emphasises the notion of 'quality education for all' in achieving Goal 4 of the SDGs: "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UNESCO, 2017, p. 6). One of the main characteristics of UNESCO's sustainable development discourse is its global character. It is a target-setting agenda to be followed by all nations in the world, reactivating thus the global responsibility for education discourse and even strengthening it as environmental problems ask for interconnected and global responses. In that, it cites:

A key feature of the 2030 Agenda for Sustainable Development is its universality and indivisibility. It addresses all countries – from the Global South and the Global North – as target countries. All countries subscribing to the 2030 Agenda are to align their own development efforts with the aim of promoting prosperity while protecting the planet in order to achieve sustainable development. Thus, with respect to the SDGs, all countries can be considered as developing and all countries need to take urgent action (UNESCO, 2017, p. 6).

The application of the SDGs framework in education varies across countries, educational levels and disciplines, from journalism to architectural and urban studies (Larrondo Ureta et al., 2022; Maruna, 2019) to Global Citizenship Education (GCED) frameworks in schools (Misiaszek, 2015). UNESCO's "Education For Sustainable Development: Learning Objectives" (2017) is widely used as a guide for implementing the SDGs in education by various disciplines and will be examined here as the primary source of unravelling UNESCO's education for sustainability framework.

In that document, the global character of the learning objectives for the SDGs is best manifested in Goal 17 Partnerships for the goals' and its pedagogic reference to construct the global citizen through "global citizenship and citizens as change agents for sustainable development" (ibid, p. 45). Here, sustainable development is connected to the idea of globalisation and a rapidly interconnected world through IT and climate change discourses. The global responsibility of education is made visible when education is considered key in promoting sustainability values. UNESCO also goes on to say that "education that promotes economic growth alone may also lead to an increase in unsustainable consumption patterns" (UNESCO, 2017, p. 7). For that, UNESCO has adopted Education for

Sustainable Development (ESD) as a key strategy that could educate towards achieving SD along with GCED its main educational discourses. According to UNESCO:

ESD is holistic and transformational education that addresses learning content and outcomes, pedagogy and the learning environment. Thus, ESD does not only integrate contents such as climate change, poverty and sustainable consumption into the curriculum; it also creates interactive, learner-centered teaching and learner settings. What ESD requires is a shift from teaching to learning. It asks for action-oriented, transformative pedagogy, which supports self-directed learning, participation and collaboration, problem-orientation, inter- and transdisciplinarity and the linking of formal and informal learning (UNESCO, 2017, p. 7).

The above is a comprehensive description of ESD and its core objectives. Through this educational model, UNESCO aspires to produce, as it calls them, "sustainability citizens" through the development of "transversal competences" (UNESCO, 2017, p. 10). These competences include system and critical thinking, collaboration, anticipatory, strategic and normative competency, and are to be achieved through specific learning objectives for each of the 17 SDGs. The learning objectives are divided into cognitive, socio-emotional, and behavioural, domains (ibid, p. 11). It could be argued that UNESCO has a clear action-oriented vision toward ESD, as its educational discourse promotes active learning and especially discourages obsolete teaching through the banking model of education. It could be argued that global citizenship builds upon the notion of sustainability citizenship that seeks to produce a highly skilled, self-disciplined and industrious individual who also cares for the environment.

All the above are aimed at materialising the SDGs target for 'quality education for all' which is a continuity of the discourse of the 'Education for All', only that now the quality is an indicator of successful education. Quality as has been discussed elsewhere in this thesis has been emerging in development discourse from the 1960s onwards (Schmelzer, 2016). It adds to the model of economic growth a qualitative function, a theme that needs to be problematised in terms of the risks entailed in "quantifying quality", as Schmelzer(2016) has pertinently noted. Quality could be argued to be entailed

in a variety of social functions, such as affect, creativity, uniqueness and so on, and differs from quantity in that it escapes clear replicability and measurement capacity. To take it a bit further (Slobodian, 2018) in his influential work on the unravelling of neoliberal history also argues that "...markets are not natural but are products of the political construction of institutions to encase them. Markets buttress the repository of cultural values that are a necessary but not sufficient condition for markets' continued existence" (p.7). Thus, the incorporation of the function of quality in development should be carefully examined in each instance towards its function in any institution and its alliances with other functions such as market technologies. For instance, in UNESCO's suggested topics for SDG 4 'Quality Education' the first task that appears is: "Education as a public good, a global common good, a fundamental human right and a basis for guaranteeing the realization of other rights" (UNESCO, 2017, p. 19).

The above may collide with other trends in education that see quality in education only realised through a privatised, competitive market-oriented approach in the education sector (Robertson et al., 2002). This way, the function of quality can be utilised to encase markets into education through quality assurance strategies. However, from the above quotation, UNESCO (2017) seems to regard education as a public good with a combination of humanitarian, rights-based and modern education discourses around indicators, attainments, and inclusion.

We could argue at this point that UNESCO upholds a more humanist political stance, oriented towards SD and guided by an open-ended approach to education. This is evident in the learning objectives that have been set for the rest of the SDGs. For example, SDG 6 'Clean water and sanitation', recognises water as a human right and a global common good, while SDG 7 'Affordable and clean energy', stretches the importance of renewable energy and energy efficiency and sufficiency (UNESCO, 2017, p. 23-25). An entrepreneurial approach is often used to find sustainable solutions,

but this approach may ignore important discussions around the limitations of technological efficiency in addressing issues like climate change. For instance, Jevon's Paradox demonstrates that increasing energy efficiency can result in higher levels of consumption, as the saved energy is often spent in other areas, known as the 'rebound effect'.(Alcott, 2014). Nonetheless, on the suggested topics for SDG 8 'Decent work and economic growth,' UNESCO mentions "Alternative economic models and indicators: steady-state economies, common-welfare economies, de-growth, subsistence economies, Inclusive Wealth Index, Global Hunger Index", as well as it refers to the "(economic) value of care work"(UNESCO, 2017, p. 27) and "Green economy (cradle-to-cradle, circular economy, green growth, degrowth)" (ibid, p. 35).

Learning for sustainable development enables everyone to get back into a complex and changing society by appropriating the mechanisms of thought and action, allowing it to understand the interactions between the local and the global perspective of the consumerist approach based on our materialistic society and to envisage a lifestyle grounded on ethical conduct involving equality and solidarity (UNESCO Chair, France).

The push within societies to emulate the industrialized societies' overconsumption ... will ultimately mean worsening unsustainable livelihood for the vast majority of Pacific Island peoples (UNESCO Chair, Tonga).

Box 1. 'Education for sustainable contraction' (Selby, 2010, cited in (UNESCO, 2012, p. 21).

The above discourse from UNESCO's chairs endorses the 'sustainable contraction' discourse which highlights the urgency to reduce the amount of resources humanity consumes with the possibility of creating synergies with the de-growth theory of development in the North context. Therefore, UNESCO's open-ended political stance towards the SDGs, it could be argued, leaves space for various interpretations and synergies. That said, it could also be seen as quite vague when it comes to implementing these changes in various disciplines. This has been the focus of Weber's (2020) critique

on the trade-offs of the SDGs when seen through means of implementation and especially in alignment with economic growth models of development. In that, she argues:

As the tacit priority assumed by Goal 17-related objectives demonstrates, there is a strong bias in favour of further commodification of public services and the commons, of the pursuit of economic growth, of the empowerment of private interests, and against commons-type understandings, institutions or practices of linking environmental and development objectives. The problems associated with the SDG agenda are thus to a significant extent obscured through the political traction that the discourse of sustainable development has commanded generally (Weber & Weber, 2020, p. 8).

For Weber (2017), the SDG framework is the extension of the neo-liberal agenda to matters of resource and public goods ownership that becomes feasible through its implementation strategy more so than its rhetoric. According to the latter, the reason why the SDG agenda is considered a move towards globalising neo-liberalism is because of its strategy to utilise what she calls 'market episteme' tactics to pursue development globally. As she argues:

the SDG project (if implemented as anticipated) looks set to reinforce the conditions which sustain deprivation of fundamental entitlements to life-sustaining needs for many, such as for example, to water, food, shelter, decent work, and lived lives of dignity (Weber, 2017, p. 401).

Her argument is based on a historic development strategy from aid to development through markets that started roughly in 2000 in Doha (p. 402).

The science-policy interface often has an accelerating effect on the implementation of policy as it acts as an authoritative force of knowledge with little if any room for questioning its validity. This has been the case in producing transboundary climate change policy recommendations for water and air management based on scientific data (UNECE, 2018), but it has been extended to education policy (UNECE, 2007, 2020) discourse and UNESCO's strategy on the implementation and monitoring of ESD. According to Singer-Brodowski et al., (2021) who have conducted research on the ESD policy implementation in Germany, the science-policy interface is a non-linear transfer from science to policy (p. 554).

ESD policy implementation is according to the latter heavily influenced by the "governance by comparison" model in education, which produces 'standardisation' and eventually "is narrowing education down to what is of economic value" (p. 562). Singer-Brodowski et al., (2021) argue that although the science-policy model of governance is fervently promoted in education, its nebulous character due to policies and science are different and often conflicting discourses remain hidden from the narrative. This is made more explicit if someone observes the power relations across different policy and science actors regarding policy orientations. Thus, they argue that "constructive personal relationships", as well as personal values and beliefs, may affect education policy at a bigger scale than structured evidence and analysis (ibid, p. 564-565).

Thus, more attention should be drawn to the mediation processes between science and policy, as well as the role of power in constructing ESD policies. For Singer-Brodowski et al., (2021) "...the levels of autonomy, ownership and meaningful co-creation of ESD governance, practice and research" are guidelines that can strengthen ESD's policy-science nexus in education (p.566). Taking this into consideration, the nexus between science and policy seems to be a good strategy for ESD, as Misiaszek, (2021) has suggested, only if it is based on adequate levels of autonomy and ownership and is not being imposed as a top-down universalising policy.

Their critique stresses the importance of ownership of public goods, that extend from public natural spaces to education, and the problem of increased market access to environmental and public asset management to the expense of local and indigenous populations. This argument can be utilised in the implementation of the SDG agenda in schools to assess the means of implementation of the SDG framework against issues raised by environmental and social justice concerning inequality.

4.1.1. Implementing sustainability in education through UNESCO's ESD

An important aspect of UNESCO's implementation approach to ESD is its holistic character, meaning that it does not regard it as an isolated subject. Rather, it regards it as a dynamic subject that needs to be advanced in education governance, curriculum texts and teacher training. "ESD has to be integrated in all curricula of formal education...ESD concerns the core of teaching and learning and should not be considered as an add-on to the existing curricula" (UNESCO, 2017, p. 49). It goes on to suggest that "ESD...must become an integral part of teaching and learning of core subjects (e.g., math, sciences, social studies and languages)" (ibid, p. 51). We can see here UNESCO's vision for the future of education through ESD that is not considered a subject but a whole pedagogic approach with its methodology, learning objectives and aims.

Larrondo Ureta et al., (2022) give an example of how the UN's SDGs can be utilised pedagogically to promote holistic and creative learning. Here the SDG agenda is applied as a pedagogic framework in university teaching. There is an exchange here between policy and social science, where policy steers learning and research. The SDGs are used as a source and content in developing relevant journalist training courses. Under the guidance of the seventeen SDGs, students had to produce sustainability relevant online news reports. This method was used as a way to develop, as the authors mention, "Transversal Competences (TC)" (ibid, p. 143). The authors also highlighted the connections between teaching through the SDGs and "emotional literacy" (p. 149). Misiaszek, (2021) calls this affective side of knowledge production and dissemination "ecopedagogical literacy" which entails the critical "reading of development" (p. 1). Education for Sustainable Development:

- is based on the principles and values that underlie sustainable development;

- deals with the well-being of all three realms of sustainability - environment, society and economy;

- promotes lifelong learning;

- is locally relevant and culturally appropriate;

- is based on local needs, perceptions and conditions, but acknowledges that fulfilling local needs often has international effects and consequences;

- engages formal, non-formal and informal education;

- accommodates the evolving nature of the concept of sustainability;

- addresses content, taking into account context, global issues and local priorities;

- builds civil capacity for community-based decision-making, social tolerance, environmental stewardship, adaptable workforce and quality of life;

- is interdisciplinary: no one discipline can claim ESD as its own, but all disciplines can contribute to ESD;

- uses a variety of pedagogical techniques that promote participatory learning and higher-order thinking skills.

Box 2. Essential characteristics of education for sustainable development (UNESCO, 2005). Source: Wals, A. E. (2012). Shaping the education of tomorrow: 2012 full-length report on the UN decade of education for sustainable development. Unesco.

Misiaszek, drawing from a Freirean reading of pedagogy as the capacity of the oppressed to transform their realities by doing, emphasizes exactly the importance of 'praxis' in ecopedagogical literacy as "only learning without praxis is perverse..." (ibid, p. 2). According to Misiaszek (2015), Global Citizenship Education and Ecopedagogy are inherently tied together, as socio-environmental problems are interconnected and global in scale. For example, climate change is a socio-environmental problem that transcends national boundaries and demands global corporations. However, Misiaszek (2021) suggests that we should be careful not to implement 'globalisation from above' but to frame globalisation in a way that protects the local environment against neoliberal globalisation. Since an ecopedagogical approach to education tries to resist neo-liberal globalisation as has been shown above, or the centering of the economy above people and planet, it could be argued can create synergies with a degrowth approach to the economy. In the Global North, it can be utilised as a theoretical framework in approaching issues of further development and well-being in conjunction with planetary limits and social cohesion, an aspect that UNESCO also highlights in its discourse on sustainability. It could be a type of management in education or a climate change mitigation and adaptation strategy that promotes healthier and more just ways of living, a theme that will be explored further in more detail as we move to the next chapters of this thesis.

Misiaszek (2015) maintains that Ecopedagogy should be incorporated holistically in all educational levels and all disciplines. This agrees with UNESCO's approach to the matter of how we implement sustainability in education. This surely comes along as a whole curriculum and assessment transformation in education systems that would include innovative ways of teaching and learning through transdisciplinarity (Misiaszek, 2015, p. 288).

Although it has been almost 20 years since the Decade for Education for Sustainable Development (DESD), the progress that has been made in terms of integrating ESD into formal education has been slow and little. This is visible if only one looks at the formal national curriculum of the countries of interest in this thesis, Greece and England. The sustainability programme may have been very ambitious at the discursive level in the UNESCO (Gadotti, 2010a), but has shown how difficult these changes are when encountering mainstream development and modernisation. Perhaps this can be better understood when looking at the SD discourse of the OECD and the World Bank where we can have a more complete cycle of global forces for SD and their aligned/conflicted discourses.

According to Gadotti (2010a), the ESD agenda is a qualitative extension of the previous UNESCO EFA agenda that promoted access to education for all. The difference lies within the scope and

content of the ESD as it is wider and extends to areas beyond education as it requires transdisciplinary action. That said, one indicator of an effective ESD strategy would be the cooperation of two or more areas of policy, such as Education and Agriculture, or Education and Social Inequality. This requires a renewed vision of educational systems that go beyond the traditional division of education into sectors towards creating more synergies between disciplines. This approach to learning, as the case in Box 3. shows, highlights the increased role that the non-formal education sector plays in advancing this agenda, as it transcends traditional schooling curriculum boundaries.

ESD is mentioned in official curricula of secondary schools. However, most educational projects on SD are undertaken outside the framework of formal curricula, in collaboration with environmental NGOs, institutions and other local organizations. These mainly foresee an active involvement of students in participatory/ interactive/open air activities. ...climate change/biodiversity/risk reductions are seen as aspects of the broader issue of SD. As an example, hundreds of schools participate every year in the ESD WEEK, promoted by the Italian Commission for UNESCO in the framework of the DESD campaign, with a wide range of activities such as seminars, lessons, laboratories, role games, exhibitions... (GMES, Italian National Commission for UNESCO, Italy) (2013, p. 41).

Box 3. Integration of ESD in schools through mainly non-governmental roots.

While ESD promoted by UNESCO is based on a vision of transformative education drawing from theories of outdoors, experiential and non-authoritarian learning, the reality of strict curriculum guidelines, and the prevailing testing culture in schools, act as constraints of education creativity towards sustainability. At the same times, non-formal schooling initiatives may help bridge that gap in formal curriculum. This is further exacerbated when the environment is seen and taught as a mere object of research, following a narrow positivist scientific framework (Gadotti, 2010a, p. 231). That is why, according to Gadotti, EFA and ESD initiatives need to work together to institute education systems that go beyond the mere attainment and ranking discourse in education. There is a need for new metaphors in education to reorient it to sustainability and ecological values. One of these metaphors according to Gadotti is coming from the educator Emily De Moore and her image of the curriculum as a garden.

The garden image embodies emerging values of sustainability...perceiving the Earth through the Earth; seeing the seed assume the form of the plant and the plant assume the form of food, the food that gives us life. It teaches us patience and careful handling of the Earth between sowing and harvesting. In gardening, we learn that things are not born ready made; that they need to be cultivated and cared for. We also learn that the world is not ready made, it is being made, it is making us; that building it demands persistence, hopeful patience of the seed, which at some moment will sprout and flower, and will be fruit (Gadotti, 2010b, p. 208).



Box 4. Transition to ESD in schools through UNESCO's (2012) whole system strategy (p. 41). UNESCO's Decade for Sustainable Development was heavily influenced by the Earth Charter (<u>https://earthcharter.org/about-the-earth-charter/history/</u>). There are several UNESCO documents and online resources that someone can access to guide them in teaching sustainability through the

Earth Charter (Gadotti, 2010b), which is a guideline of changing values towards respect for Earth, learning that demands a wholesome transformation of education as we know it that is rooted in industrialization processes and especially of the school institution (Box, 4). For primary and secondary education, which is the main focus of this thesis, UNESCO suggests that there is an upright trend in ESD in schools that is different in various countries, with no massive breakthrough to have been recorded globally yet. Then UNESCO identifies two main strategies that ESD for the school environment.

The first is the "add-on strategy", where ESD is integrated into existing curricula and the second, "the whole system redesign strategy", where the whole idea of schooling is challenged and restructured (p.41). The more autonomy there is in school management to self-organize, the greater the possibility of the whole system strategy for ESD innovations; where there is limited space for this, ESD has been approached through existing curricula, according to UNESCO (2013).

Overall, UNESCO takes on an integrating and multistakeholder approach to ESD which associates directly with SD policies. According to UNESCO, a fervent advocate of the Decade for Education for Sustainable Development, "ESD seeks to enable citizens around the globe to deal with the complexities, controversies and inequities arising from issues relevant to the environment, natural heritage, culture, society and economy" (UNESCO, 2012). To this end, education in the era of sustainable development is based on interdisciplinary and multi-scalar approaches to learning and seeks to address global issues critically. UNESCO (2012) refers to the critical component of ESD which suggests questioning predominant and/or taken-for-granted patterns and routines that are or may turn out to be unsustainable (e.g., the idea of continuous economic growth, dependency on consumerism and associated lifestyles); (ibid, p. 10). Here the model of economic growth is linked by UNESCO with unsustainable practices. Although this discourse addresses the need to have a critical

stance towards growth, the overall SDG framework that UNESCO also adheres to has been criticised for being an extension of the neoliberal agenda, especially through its means of implementation (Weber & Weber, 2020). However, it could be argued that at the discursive level, UNESCO (2012) recognised the need to build context informed ESD programmes that especially address the "SD divide" between rich and poor and between overdeveloped and underdeveloped countries, acknowledging for example in some Western region we should be concerned with "sustainable contraction", meaning a fair reduction on material use (UNESCO, 2012, p. 20-21). To have a better understanding of the complexity and often conflicting subjectivity that SD discourses produce we should now look at the other two organisations, namely the OECD and the World Bank that take a more pragmatic and neo-liberal stance toward how sustainability may shape globalisation and especially education.

4.2. OECD - The time-space of education is the global time-space

What UNESCO and the OECD have in common, and what is of discursive significance, is that their operational and claimed space is global. The global space here, as has been theorised by Robertson et al. (2002), is a constructed, flexible and strategic discourse that has socio-political implications, but also a delimiting analytical tool (p. 476). As we shall see, for example, in each latest pedagogic mandate, the OECD uses the term "global competences" to refer to the skills and attributes of students to face global challenges in the future/present. However, the global framework used by international organisations has raised a fervent debate around questions of how to define the global in an ever-complex web of social relations faced by the themes of climate change, mobility, information technologies, international trade, and distant place (Christensen et al., 2013; Escobar, 2015; Fraser, 2021; Robertson, 2021; Robertson et al., 2002), as well as postcolonial, de-colonial and indigenous rights movements (Abazeri, n.d.; Blaser, 2010; Zentner et al., 2019), or the right to land as human right

(da Silva, 2017; Genicot & Hernandez-de-Benito, 2022; Jegede, 2017). In this sense, it is important to examine the role of the OECD in relation to its potential to shape and establish a global governance framework. One of the key areas where the OECD can exert its influence is in steering global education policy. By addressing the fundamental conflicts that exist in development discourse, the OECD has the power to create a more level playing field and inform a cohesive approach to global education.

4.2.1. The OECD's governing tools

To begin with, and following a Foucauldian discourse analysis, I emphasise the description of mechanisms and events, as well as their relations and inclusions/exclusions, that allow the OECD to perform governing functions at the global scale. A key technology, to use Foucault's terms, which the OECD uses to steer international educational policy is the Programme for International Student Assessment (PISA); a comparative tool that assesses educational systems based on testing the science/ literacy/numeracy level of students regarded as the tool that connects science to policy, and consequently the politics of education to a specific scientific paradigm of doing educational research, which is statistical science and positivism. According to Grek (2009), PISA played also an important role in producing "the new European education space of competitiveness and cohesion..."(p. 24), employing statistical analyses and testing culture in education. In this way, the OECD, through the technology of PISA, has established itself as an authoritative knowledge regime in the governance of education, which largely goes uncontested.

The OECD's current brand of expertise and authority on educational matters is essentially based on the quantification of student learning outcomes conceived as 'cognitive skills', with alleged effects on economic competitiveness and growth, a relatively narrow platform which has been subject to substantial critique... (Sorensen et al., 2021, p. 101).

In the above quotation, Sorensen et al. (2021) see the OECD's governance strategy as a mechanism that is constitutive of "the emergence of a global governing complex" (p.99). This is performed

through the consolidation of PISA as an international tool for educational assessment, which establishes a measurability function to the value and purpose of education at a global scale. It is also materialised through a 'vertical vision' of educational systems through classifications, competitiveness, standards and accountability culture in the education sector (Sorensen & Robertson, 2020).

Grek & Ydesen (2021), in a more recent analysis of the relationship between the historic merger of science and policy, argues that the OECD has framed educational policy through the International Educational Indicators (INES) programme developed around the 1980s. In more detail they argue that "...education indicators have been well shown to be more than mere instruments in the making of policy; they are political constructs, always built on the verge of science meeting policy" (p. 122). Scientific knowledge according to the latter becomes from the 1980s onwards the dominant knowledge of governance in the North of all societal sectors. This is activated by the discourses of modernisation, progress, and economic growth, through the use of science.

In addition, Grek & Ydesen, (2021) maintain that the establishment of INES as an international tool for education comparison is a historically bounded construct that acts as 'a boundary infrastructure' in policy making, in the sense that "brought together a range of actors that, despite disagreements and diverse perspectives, constructed the common language of global education indicators" (p. 123). However, given the diversity of opinions about education, it could be argued that from the 1980s onwards, and with the production of INES, education entered the discursive terrain of economic growth, as "the production of knowledge around education performance was deemed necessary for conducting valid economic growth forecasts..." (p. 126). Statistical knowledge here is the main disciplinary power that shapes international comparative policy through GDP, INES, PISA, and TALIS amongst others. We could thus notice an 'embedded economy', or economic thinking here in all aspects of social life, including education (Polanyi, 1975).

Perhaps the best way to understand this particular economic growth policy orientation is to take into consideration how the environmental concerns played out from the 1970s-80s onwards, the period when the educational indicators were developed and adopted. The 1970s marked the point in which the OECD was called upon to create, for the first time, environmental policies for international ministries and no ministry had by that time an environmental department (Schmelzer, 2016). This is interesting in the sense that it highlights the weight given to the growth of the economy, which overshadowed the whole living source of the economy, the environment. The OECD captures this economic policy myopia when, in its first attempt at the construction of environmental policies, framed the environmental problems as problems stemming from the current inadequacy of the economic growth perspective (Schmelzer, 2016, p. 295). Following this framing, and for at least a short period of the early 1970s, the OECD promoted the possibility of an alternative – more sustainable - economy. This viewpoint though did not last long, and economic growth became its main approach, coupled with environmental management policy approaches that did not threaten capitalism's market economy but improved their performance. To better understand how these shifts occurred in the OECD it is pertinent to quote Schmelzer (2016) below:

Whereas the OECD's environmental outlook had originally emerged from the debates critical of quantitative growth that were characterized by a profound questioning of traditional statistical methods, expansion, and the self-regulatory powers of markets, in the following years the OECD abandoned its more radical questioning. As the organization advanced from the reconsideration of basic economic assumptions and structures of the growth paradigm to the level of intergovernmental negotiation, institutionalization, and the preparation of more tangible results, the OECD increasingly focused on assisting member countries in setting up environmental policies in line with its general mandate – the protection of free markets and the promotion of economic growth. The environmental policy norms the OECD produced in these two areas, which will be analyzed in turn, proved essential to the international establishment of what Steven Bernstein has called "liberal environmentalism (p. 295).

It is worth noting however that this did not penetrate education. Instead, as Trohler (2014) shows, education was dominated by economists and statisticians. It can be argued here that there is a big gap

between the OECD's primary critical theoretical workings on economic growth and its later policy practice. Returning to the present we can better understand how the events of developing competitive economies unfolded by using GDP and statistics, and how this emerged as the main means for coordinating education through statistics, INES, PISA etc., and gradually turning education into investment. These technologies could be argued to have paved the way for the materialisation of the global space discourse and also produced a closer relationship between education and economy through global binding legal processes of trade in services and globalisation. In other words, these agreements are aimed at instituting the production and dissemination of material/services around the globe, including its rhythms, forms of intensity, and quantity that affects education. This has been theorised by Robertson et al. (2002), who explore the globalising of a liberalisation approach to education services through the General Agreement on Trade in Services (GATS) in 1994 (p. 473) through:

1.Cross-border supply—Includes any type of course that is provided through distance education or the Internet, any type of testing service and education materials that can cross borders.

2. Consumption abroad—Involves the education of foreign students and is the most common form of trade in education services.

3. Commercial presence—The actual presence of foreign investors in a host country. This would include foreign universities setting up courses or entire institutions in another country.

4. Presence of natural persons—The ability of people to move between countries to provide education services. (Robertson et al., 2002, p. 486).

These are all very concrete discursive practices that drive the imagining and instituting of a liberal and global vision/materialization of an education market. However, the production/dissemination of products is one among many contingencies that frame the knowledge-economy discourse. This is also visible in the way the OECD describes education success in its texts:

OECD economic cum education discourses in OECD's document "Education at a glance 2021; OECD Indicators"

On average across OECD countries, the employment rate of younger women (aged 25-34) without upper secondary attainment is 43%, compared to 69% for their male peers, but the disparities narrow as educational attainment increases: 80% and 87% for tertiary-educated women and men, respectively.

Wage differentials across levels of educational attainment tend to increase with age. On average across OECD countries, younger adults (25-34 year-olds) with tertiary attainment working full time and part-time earn 38% more than their peers with upper secondary attainment; 45-54 year-olds earn 70% more.

In most OECD countries, the higher earnings advantage of older workers could be mostly related to seniority-based pay schemes (where wages rise with seniority) and to growing work experience and responsibilities (OECD, 2019[5]). However, it is also possible that the earnings advantage has fallen for younger generations, as they may face more competition in the labour market due to the rapid expansion of tertiary education.

Investing time and money in education is an investment in human capital. Better chances of employment (see Indicator A3) and higher earnings (see Indicator A4) are strong incentives for adults to invest in education and postpone employment. Although women currently have higher levels of education than men on average (see Indicator A1), men enjoy better employment and earning outcomes from education, on average.

Adults with tertiary attainment not only expect to live longer, they also report being in better health than adults with below upper secondary attainment. Across all OECD countries with available data, the higher the educational attainment, the higher the percentage of adults reporting being in good or very good health (OECD, 2021, p. 114).

In the above textual discourses taken from a recent OECD report on adult education, "Education at

a Glance, 2021", the connection between economy and education is made explicit. The advantages of pursuing higher education degrees are measured through earnings rankings and forms of comparison. Education is seen as an 'investment in human capital' and thus connected to economy and productivity discourses. Productivity, however, translates into higher earnings and employability, three highly influential discourses in modern societies. Here education comes to play an even bigger role than in previous eras that prioritised physical labour, it is made into the primary source of productivity/employability/higher earnings. It takes over previous discourses of productivity as physical labour; it is the new fuel for development. It is worth noting at this point that the centre of

education/knowledge production remains the city, which is associated with the human capital by materialising it in space, and more specifically in the city space. This connects to the previously mentioned discourse on "the society-nature opposition" (Wachsmuth, 2012), which is reactivated here in positing the productivity discourse in an industrial city area. Thus, it could be argued that the knowledge-economy discourse is produced here through the making of the new knowledge worker which in turn reshapes the economy/education toward a non-corporeal, mind-centered type of productivity in an open-ended global economy materialised in the big city (Brenner, 2004; Sassen, 1991).

Another theme that emerges from this text is the corporeality of education when merged with health discourses. Education here is also connected to health and longevity; two important discourses in modern societies that reactivate the medicinal, psychological, and other health discourses, in general. The reactivation here is made through education, as it is considered by the OECD to be closely associated with people earning a tertiary degree to be in very good health and live longer. Bodies are thus made healthier through education. It could be argued at this point that attaining an education to the highest level possible is considered by the OECD report beneficial for the economy to grow and for the individual to reach its highest productivity and living standards. However, taking into consideration persisting wage differentials between women and men, despite women winning in the tertiary education has failed to address.

Productivity/employability/higher earnings on the one hand, and health and longevity on the other, create a powerful discourse of the gains of being an educated individual. This, in turn, sets certain expectations by the educational system and education institutions, including schooling, which is also connected to this growth discourse. In this regard, education changes toward more material/direct

gains of production of the economy but is also linked to individual success and bodily health. Although other discourses still affect the OECD's discourse - as we shall see in global competences - these two main discourses of economic productivity and health are considered to have been growing in intensity in recent years in the framing of the educational processes and outcomes, although they are not always explicitly named. However, there are also the degrowth/post-development discourses at play challenging the validity of the assumption that economic growth in developed countries equals happiness/satisfaction. This maintains, in fact, the opposite; that after a specific economic growth threshold has been met there is a downturn in happiness posed by a significant increase in anxiety levels (Van den Bergh, 2007).

At the same time, the more political and citizenship-oriented aims of education have been downgraded. These changes are only some in a series of changes that are happening in the process of transforming the state and the market amidst the digital age, climate change and globalization (Dale & Robertson, 2009). It could be argued that sustainability, and to an extent climate change discourses, come to signal this downgrading of other national/political citizenship discourses as they tend to refer to an imagined global community, and "planetarity" with common global challenges (Gadotti, 2010b), whilst the role of the educated global citizen is to sustain the economy and social cohesion amidst multiple crises (Robertson, 2021; Weber, 2014). Sustainability discourses in education are then produced through claims to economic and health benefits for the individual and the wider global society and sustainable development. The environment here is made an object of sustaining the economy and health of the population. The problem starts when one thinks of the contradictory discourses that these two areas of knowledge create, and its power relations. Let us for now, though, keep in mind that sustainability discourses in education pose the question of the body and its various needs, wants and functions, in conjunction with environmental limits in a post-industrial era.
In summary, this section has described the role of global measurement/comparisons in education in a historical context of producing global education narratives through PISA. It has also included the renewed production of global narratives through mainly the SDGs and global competence agendas in the OECD's discourse. Especially for the SDGs, Sorensen et al. (2021) suggest that it "is synthetic in the ways that it has drawn together conflicting strands of international development thought, forging a superficial unity of purpose among a diverse range of actors" (Sorensen et al., 2021, p. 101). This becomes visible through the various, often conflicting, discourses that the OECD came to address within itself, with the economic growth narrative winning the battle of discourses for development around the 1980s (Schmelzer, 2016). The OECD's recent global competence agenda is perhaps the policy framework that seeks to reactivate the global space of education, although as Robertson (2021) suggests its radical potential has been subverted by its alliance with Asia Society whose "...aim is to advance US corporate capital's interests through the cultural production of the new worker citizen able to participate in the global economy, while managing its tendencies to reduce social cohesion" (Sorensen et al., 2021, p. 102). The global space in this type of analysis has been thus deconstructed by making visible power relations that are grounded in specific powerful nations that can steer international policy. Going beyond these international actors though, this section on the OECD and education has pinpointed the historic emergence of science and policy through the use of statistical tools and how the levelling out of conflicting discourses and the economic growth narrative in the OECD has historically shaped its present functions on the making of education through economy. It is worth turning now to the OECD's pedagogic discourse on global competences, which is seen also as entailing the sustainability imperative of this post-industrial era.

4.2.2. Global Competence

One of the most important educational aims of the OECD that contributes to sustainable development is the concept of global competence. "In 2015, 193 countries committed to achieving

the UN's 17 Sustainable Development Goals (SDGs), a shared vision of humanity that provides the missing piece of the globalisation puzzle. The extent to which that vision becomes a reality will depend on today's classrooms, and it is educators who hold the key to ensuring that the SDGs become a real social contract with citizens", writes Andreas Schleicher, Director of the OECD Directorate for Education and Skills, and Special Advisor on Education Policy to the Secretary-General asserts in the 2018 OECD PISA global competence framework. Here education is viewed as a global force, which precipitates transformations in educational institutions worldwide toward the SDGs. Addressing the idea of globality and becoming a 'global citizen' is one of these changes that push education to certain changes both in its mandate and contents. It remains to look at some of the key elements/events and intensities of these changes, at least at the level of their positionality, as it would be unsettling to assume that these refer to what is happening in the reality of the classroom. Nonetheless, it could be argued they set the tone for the development of educational policies and thus framing of realities.

One characteristic that stands out and is of importance in the OECD frameworks is the assertion of the assessment mechanism as the process that leads to the visibility of an expected outcome. Andreas Schleicher writes, referring to the educational Goal 4 of the SDGs that "...such goals are only meaningful if they become visible. This has inspired the OECD Programme for International Student Assessment (PISA), the global yardstick for educational success, to include global competence in its metrics for quality, equity and effectiveness in education". The onus here is on how to assess global competence, who is the global competent, and the singularity of 'one' global competence and how is it structured.

Perhaps the answer comes from Gabriela Ramos, OECD Chief of Staff and Sherpa to the G20, who writes: "...The development of social and emotional skills, as well as values like respect, self-confidence and a sense of belonging, are of the utmost importance to create opportunities for all and

advance a shared respect for human dignity. The OECD is actively working on assessing global competence in the PISA 2018" (OECD, 2018). Here, certain rather emotional and soul-centred characteristics come to the fore of the global competence framework, like self-confidence and human dignity. At this point, then, it seems as though the OECD PISA assessment looks to deepen its assessment capacity to the emotional side of education, which always has been the one to escape measurement and strict definitions through its tacit and rather osmotic pedagogical effect. Is the OECD, one could wonder, trying to instrumentalize the emotional and affective side of pedagogical work? There is a long way to go to make this generalisation although the insistence to use PISA in measuring a rather vague concept is alarming.

It is worth examining further what is to be measured in the global competence framework especially regarding sustainability as it relates to the scope of this thesis. To begin with, global competence is defined by the OECD as follows: "Global competence is a multidimensional capacity. Globally competent individuals can examine local, global and intercultural issues, understand and appreciate different perspectives and world views, interact successfully and respectfully with others, and take responsible action toward sustainability and collective well-being" (OECD, 2018, p. 4). At first glance, we can observe that although global competence is a singular category, it is constructed as if it is a 'multidimensional capacity'. Then the definition combines multicultural and communication abilities elements coupled with the capacity to act toward sustainability and well-being. The link between sustainable development policies and health as has been observed already is repeated in this definition. The transformations that are made visible here and that are sought in education are affected greatly by globalisation but also by two fundamental discourses of later modernity of sustainability and well-being. In the case of globalisation, the task is twofold; to create the 'global worker' as "Employers increasingly seek to attract learners who easily adapt and are able to apply and transfer their skills and knowledge to new contexts" (OECD, 2018, p. 4), but also the 'global citizen' as "education for global

competence can promote cultural awareness and respectful interactions in increasingly diverse societies" (OECD, 2018, p. 4). The global dimension of the framework is referred to mainly as an economic attribute of education advantage and a multicultural aspect, which is viewed as a conflict-resolution management process and enhanced communication skills based on awareness and respect.

The sustainability and well-being aspect of the global competence framework is made visible through the endorsement of the 4.7 target of the SDGs which states: "to ensure, by 2030, that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" (Target 4.7, Education 2030, Incheon Declaration and Framework for Action, page 20). The sustainability of the global competence framework, as someone can notice, is based on a cultural discourse of equality, peace and human rights, aiming theoretically at a more 'humane' global system. It also refers to the promotion of sustainability culture to the next generations as creating the subjects "who care about global issues and engage in tackling social, political, economic and environmental challenges" (OECD, 2018, p. 4). To what extent, though, can we measure/assess qualitative elements such as care, appreciation of cultural diversity or even global citizenship? And if it were to be assessed what would be the implications for those failing to pass the test of global competence? Can we impose such elements as care, affect and appreciation and how?

Perhaps we can, and certainly in theory this framework assumes that we could, measure these qualities and thus perhaps that we can teach them. But how you teach care, affection or critical thinking is the never ending and grey spot of educational discourses. It appears the OECD claims that these can be assessed through a double test of cognitive skills and general attitudes, especially tolerance toward the 'other'. Thus, according to the OECD (2018) "The cognitive assessment is designed to elicit students' capacities to critically examine global issues' while 'In the background questionnaire, students will be asked to report how familiar they are with global issues; how developed their linguistic and communication skills are; to what extent they hold certain attitudes, such as respect for people from different cultural backgrounds..." (p. 6). The first element that emerges from this discourse is that global competence can be assessed through critical thinking, which is categorised as a cognitive skill, although it refers to elements of care and effect, which can be argued refer more to the soul than the mind of students. The second is the capacity to be tolerant of cultural diversity through efficient linguistic and communication skills. We can start here tracing some crucial characteristics of the global competence discourse; that of care for global issues, critical thinking and action (based on evidence-based approaches to learning and acting, the scientific discourse), tolerance and communication skills. One could argue that this is a highly controversial and versatile discourse, promoting a global culture through, for example, sustainable development. In other words, sustainability it will be argued, is the glue that ties the global competence discourse together. That is the objective of the culturally tolerant and caring educational system and of citizens.

Examining issues of global significance: an example

In her history course, a student learns about industrialisation and economic growth in developing countries, and how these have been influenced by foreign investments. She learns that many girls of her age work in poor conditions in factories work for up to ten hours a day, instead of going to school. Her teacher encourages each student to bring one item of clothing to class and look at the label to see where it was manufactured. The student is surprised to notice that most of her clothes were made in Bangladesh. The student wonders under what conditions her clothes were made. She looks at the websites of various high-street brand shops to see if the websites can tell her about their manufacturing standards and policies. She discovers that some clothing brands are more concerned with human rights in their factories than others, and she also discovers that some clothing brands have a long history of poor conditions in their factories. She reads different journalistic articles about the issue and watches a short documentary on YouTube. Based on what she discovers, she starts to buy fair-trade clothing and becomes an advocate for ethically responsible manufacturing

Box 5. An OECD storytelling on incorporating sustainability in education.

The above story (Box, 5) is from the OECD (2018) framework for global competence and describes quite thoroughly the way global competence is imagined and performed in schools. It also provides useful information on the transformations that the global economy undergoes and ways to sustain it by choosing other ways to perform the economy. It seems that the educational task tends to address moral and ethical issues that are well vested in international commerce and arguably raise questions to the extent that this learning is indeed effective. Nonetheless, disciplining the individual consumer toward more ethical or sustainable commercial options is one of the elements of the sustainability framework in education. This sustainability framework in education co-exists with international trade laws and other characteristics of a highly competitive, material and energy consuming international production that still depends on energy intensive economies and thus fossil fuel and renewables combined. These kinds of contradictions make visible the subtle, simultaneous and often conflicting trajectories of development discourses. Education can be placed at the interregnum of these discourses, appropriating in many cases what can be said or not said in any specific case.

An important insight into how this 'global' discourse is contradictory came while I was attending The Cambridge Climate and Sustainability Forum 2022, 'A Climate Reset'. Amali Tower, founder of an NGO called Climate Refugees, in her speech about 'Decolonising climate responses', pertinently argued that the "climate crisis is a colonial crisis", to the extent that climate crisis produces displacement and migration. She then went on and discussed how this refugee crisis is met with national and border security legislation in powerful industrialised nations, like the U.S. and U.K., that are "making sure to keep people out, while are destabilizing the world". In this instance border security discourse is activated, though, legal means, overrunning human security and freedom of movement discourses. Coming back to the OECD framework of 'global competence' it could be argued that is contradicted by the Global North's securitisation discourse toward climate refugees/migrants, as its highly ethical discourse toward peace and cultural diversity collides with the simultaneous legal frameworks of illegal movements of populations that renders the global competence agenda an analytical casuistry.

The conflicting character of the 'global competencies' agenda has been also examined by Robertson, (2021), who described it as 'provincial' in that its ideational anchors are shaped by US corporate interests. The adverb 'global' is used here to refer to the 'global worker' capable of keeping the capital competitive in the global market. However, the OECD uses the term global competence not only in strictly economic terms but also as an educational response to global challenges that are to be addressed through the materialization of Goal 4. of the SDG's framework. According to Robertson (2021), "The Organization for Economic Cooperation and Development (OECD) has positioned itself to be the key international agency assessing the realisation of SDG 4.7", especially through the implementation of "global citizenship" and through measurement of global competence (Robertson, 2021, p. 167).

The use of the word global competence then takes on a complex political task: to advance neoliberal capital at the global scale and ameliorate the effects of extraction, immigration, climate change and other global challenges. The first may appear more connected to the field of the economy and the second to social cohesion/contract and they may be connected or disconnected at different times and locales but in theory, they are interconnected in the global competence framework. These competences refer to certain characteristics/skills that a subject should acquire to perform the global economy with others and the matter becomes perplexed when one considers the discontinuities and exclusions that this discourse actively produces. More specifically, what Robertson (2021) pertinently suggests, is that the OECD has produced the global competences framework based on particular views of the global economy as a growing global competitive economy by eliminating from its narrative other alternative economic proposals, such as degrowth, which could be used to materialize a reconciliation and a sustainable relationship between society and environment. Below I quote her to an extent referring to two key documents that framed the global competences agenda and their discontinuities.

The 2016 Report (now electronically unavailable) is more wide-ranging than the later 2018 Report, suggesting that the move from outlining the issues to developing a framework involved the exclusion of particular concerns. For instance, in the 2018 Framework paper, degrowth as a response to climate change and GDP-growth models of economic development disappear. In the 2018 Report the main challenges are seen to be the movement of populations across national boundaries and the challenges of social integration, religious tensions, and new hazards for young people arising from digitally mediated worlds. The OECD points to the positive value of global competences in terms of the employability of young people in changing labour markets as this signals a flexible and adaptable mind able to cope with new situations (Robertson, 2021, p. 171).

According to the above a reactivation of the narrative of economic growth, coupled with sustainability objectives and a moral ethical discourse of inclusion and diversity tolerance coexists with securitisation and exclusion discourses in the North. Since the climate crisis poses the question of the global in education, it is important to examine how these discourses are played out and are implicated in

excluding and (dis)continuities in discourse. This perhaps can then shed some light on how we can resist some injustices that take place in education and perform pedagogies that can alter the way we conceive the global/local and the body in a post-carbon society.

In summary, this section has described the role of global measurement/comparisons in education in a historical context of producing global education narratives through PISA. It has also included the renewed production of global narratives through mainly the SDGs and global competence agendas in the OECD's discourse. Especially for the SDGs, Sorensen et al. (2021) suggest, that "is synthetic in the ways that it has drawn together conflicting strands of international development thought, forging a superficial unity of purpose among a diverse range of actors" (Sorensen et al., 2021, p. 101). This becomes visible through the various and often conflicting discourses that the OECD came to address within itself, with the economic growth narrative winning the battle of discourses for development around the 1980s (Schmelzer, 2016). The OECD's recent global competence agenda is perhaps the policy framework that seeks to reactivate the global space of education, although as Robertson (2021) suggests "its aim is to advance US corporate capital's interests through the cultural production of the new worker citizen able to participate in the global economy, while managing its tendencies to reduce social cohesion" (Sorensen et al., 2021, p. 102). The global space in this type of analysis has been thus deconstructed by making visible power relations that are grounded in specific powerful nations that can steer international policy. Going beyond specific national boundaries, this section on the OECD and education has pinpointed the historic appearance of the power couplet; of science and policy using statistical tools and how the levelling out of conflicting discourses and the economic growth narrative in the OECD has historically shaped its present functions on the making of education through economic thinking. The science-policy and economic narrative are the ways in which the OECD produces the global time-space in education.

4.3. The World Bank- Knowledge for Development: Education as a force in the movement

In the Mauritanian desert, a group of tourists is guided by young English-speaking, formerly unemployed graduates. They draw on the indigenous knowledge of nomads to help explain the movements of dunes, meteorological change, and archeological remains. Owing to a very efficient telecommunication policy implemented by the government, tourists are accommodated in hotels with rapid Internet connections, and this has been an important factor in their decision to come to Mauritania. Along with tourism, new activities flourish: garages for repairing the four-wheel drive vehicles that transport visitors, cultural events organized in places with ancestral traditions. These initiatives are supported by foreign investors attracted by an improved business climate (World Bank, 2007, p. xiii).

The above quotation from the World Bank summarizes the knowledge-economy vision for humanity. It could be characterized as a vibrant, resourceful, and technologically prolific, vision for the role of knowledge in development. Among the many discourses at play in this narrative, I will emphasise the movement of goods or the discourse of never-ending movement in relation to knowledge and the World Bank's related capacity to build knowledge for development drawing mainly from its report 'Building Knowledge Economies: Advanced strategies for development' (2007), the Global Knowledge Index report (UNDP, 2021) that it endorses and relative web search and most recent reports of the Bank, mainly it's 2010 and 2018 reports that directly refer to climate change and learning. Throughout the section, I seek to examine the links between economy, sustainability and education in the Bank's agenda.

4.3.1. Shaping the concept of a knowledge economy

The World Bank is conceived, along with the OECD, EU and WTO, as a central player in shaping the concept of the knowledge economy that has indeed had a great impact on education systems and poses the question of the transformation of traditional education institutions both in their structure and context of learning globally and more specifically toward neo-liberal globalization (P. Brown et al., 2008; Dale, 2005; Enns, 2015; Robertson, 2005). According to these authors, the Bank's knowledge economy discourse has been significant in globalising neo-liberalism and thus optimising and reigniting faith to the economic growth model. How is this neo-liberal globalisation manifesting itself in the World Bank discourse? The way the World Bank has achieved the wide recognition of knowledge economy as a legitimate discourse for development is, I shall argue by recognizing knowledge as a force in movement. This is occurring through mainly three categories of its actions, the technological innovation orientation which adopts new growth theoretical presuppositions, the supranational rescaling of education, and the life-long learning discourses at work.

To begin with, the knowledge economy strategy poses a certain type of knowledge as pivotal for development and progress and that is the techno-scientific paradigm (Robertson, 2005). In that, Enns, (2015) also suggests that the Bank has favoured the human capital theory of development to leverage further economic growth throughout the 1990s. He maintains that despite the organisation's proclamations for the importance of indigenous knowledge in development, "such knowledge was never incorporated into the World Bank's education strategy" (p. 61). In stark contrast, the latter highlights that not all knowledge is regarded as equal, and the way knowledge travels shows the power relations between knowledge empires and indigenous knowledge that are often portrayed as inflicted with darkness and poverty. Characteristic is the next passage from the World Development Report 1998-99:

Knowledge is like light. Weightless and intangible, it can easily travel the world, enlightening the lives of people everywhere. Yet billions of people still live in the darkness of poverty – unnecessarily (World Bank, 1999a: 1, cited in Enns, 2015, p. 68).

We can trace from this early work the idea of knowledge as a force, like the light that travels and holds the power to enlighten the world. Knowledge and movement are two main traits of the knowledge economy (KE) discourse. The non-static but rather fluid and travelling character of knowledge sits well with ideas of lifelong learning, globalisation and a global market economy that shape our current education systems. But they also pose the problem of locale or scale, as education/knowledge moves across space and time. In that Dale (2005) cites:

The changes seen to be required by the KE would entail the transformation of education systems as we know them; even radical reform of them would be insufficient to bring about the shift from 'education in institutions' to 'learning anywhere, any time and just for me' (p. 118).

The above insight captures the reconfigured spaces of education that are no longer bound just to the classroom, to the school, to the national exam tables to the local university, but they travel across the globe from the online classroom anytime, anywhere, to international learning online language courses, to distant learning university degrees. Thus, Dale (2005) has argued that the main mechanism through which the globalising neo-liberalism effect is manifesting itself in education is the development "of new supranational forms of 'education' that consciously seek to undermine and reconfigure existing national forms of education..." (p. 123).

Of course, these changes would not have been possible without the investment and recognition of techno-science as the ultimate and legitimate kind of knowledge by the World Bank (Enns, 2015), which is considered a fundamental tool in making knowledge travel faster and producing new forms of knowledge production and dissemination. Thus, the main way economic growth mechanisms enter education institutions at this point in history is through technology. Technological materials, firms and techno-science have changed education and will continue to transform it in many ways, as is for example the introduction of distance learning and online teaching. This demand has created a whole new education-technology market, for example, education apps (Edtech), that ultimately transfer, complement or substitute the role of teachers, curriculum, and pedagogy. This movement has been supported by the World Bank which sees technological advancement in education as the way to renew the sector and the teacher profession from the malice of stagnation (Robertson, 2005) and thus achieve

life-long learning for all. The overall notion of movement and transfer of knowledge then denotes a knowledge economy exchange, a movement that is seen by the WB as a necessary condition for development and progress.

As technology has changed the rhythm of production and consumption, it increasingly changes the rhythm of education, knowledge production and dissemination toward faster rhythms of knowledge transmission and acquisition, global knowledge networks and applied, functional forms of knowledge. In contrast, indigenous knowledge as 'characterised by some degree of localness', and thus as authentic and spontaneous responses to the changing environmental and social circumstances of each epoch are irreplaceable by any form of homogenized universal knowledge. Its spontaneity, though, and context driven nature, make it difficult to be captured by market mechanisms and thus unsuitable for production, dissemination, and cost-effectiveness market discourses. Techno-scientific knowledge, it could be argued, is the most appropriate discipline through which the World Bank reactivates processes of modern economic expansion and through the exclusion of other forms of knowledge, the reversal principle of discourse is observed where discourses are limited and appropriated according to Foucault.

The event that historically highlights these exclusions can be traced in the research programme of the Bank about knowledge and development back in the 1990s. To be more specific, according to Enns (2015), there were two departments within the World Bank, the World Bank Institute and the Africa Region department, that produced a rich amount of work for indigenous knowledge and its significance for local development. Together they created the Indigenous Knowledge for Development Programme (IKDP) that suggested that "the right type of knowledge for development already existed within communities" (Enns, 2015, p. 71).

Despite evidence produced by the two departments on the importance of incorporating indigenous knowledge into local schooling contexts, the Bank did not adopt this strategy into its education planning and funding during the 1990s (Enns, 2015, p. 71-74). Instead, it "...emphasized the importance of using education as a means of achieving global market integration" (ibid, p. 72), while indigenous types of knowledge were silenced partly because of the low hierarchical positions that the two departments were occupying within the organisation. These hierarchies, Enns (2015) argues, are connected to "how the World Bank uses research and publishing as a tool of paradigm maintenance", as it allows its "lending and policy preferences to shape its research programme, rather than vice versa" (p. 76).

While it seems that the Banks's approach to knowledge is more open than it used to be, it fails to incorporate into its practice/discourse indigenous and climate responsive knowledge, outside the techno-scientific paradigm. This inability renders the World Bank an institution that reproduces the economic growth discourse by especially favouring New Growth theories and by allowing economic practices to dictate research agendas. Thus, the World Bank is a force in education and development that dictates social movement is a progressive/growth theory motif, which I explicate below.

4.3.2. The new growth model, knowledge economy and the World Bank complex

Education has always been implicated with economic growth, as universal schooling coincides with the creation of modern liberal states (Irwin, 2017). However, there are reasons to maintain an increased intensity toward the connection of education to the economy as articulated through mainly the knowledge economy discourse. As Robertson (2005) has also suggested "education in the knowledge economy will not be education as we have known it" (p.152), as new growth theories regard education, training and technology as embedded in the economy and thus as an economic sector per se.

Knowledge too holds an intrinsic value to societal development from prehistoric times to industrial times. The passing down and preservation of knowledge is the cornerstone of progress and civilization across cultures, regardless of their unique knowledge systems. In the modern context, knowledge largely is a driver of development and as of recently is regarded more and more as the pillar of economic growth. Hence the discursive emergence of the knowledge economies, one of the most powerful constructs of late modern societies (World Bank, 2007).

The World Bank utilises both education and knowledge as tools to construct its knowledge economy discourse and produce respective measures and comparison tools. In this vein, knowledge and economic growth become inseparable and economic growth cannot be sustained without knowledge. To illustrate that knowledge is a prerequisite for economic growth, the World Bank highlights "that sustainable economic takeoff cannot take place below a threshold literacy rate of 40 per cent and a minimum telephone density of 30 per cent" (World Bank 2003c, cited in World Bank, 2007, p. 4). This is indicative of how sustainable development is linked to the economic growth model of development.

As discussed before, for the Bank, not all knowledge is beneficial to the economy and/or effective as it states, "knowledge influences competitiveness, economic growth, and development as long as it finds concrete applications—in other words, as long as it is at work" (World Bank, 2007, p.6). It emphasizes three characteristics of knowledge for development: (a) driver of competitiveness and productivity; (b) facilitator of welfare and environment; and (c) enabler of institutions and governance (ibid, p. 5). What is more, according to the Bank, is that knowledge "constitutes an entry barrier to growth" (ibid), intangible and difficult to obtain. This leads the bank to talk about "knowledge rents", as something that you can rent for a while but not obtain for eternity as it needs constant renewal, hence life-long learning discourses. There are several knowledge rents, amongst them is the human

capital, which is the "availability of unique and advanced human skills and know how" that falls largely under the education category (p. 5). Therefore, the Bank dedicates a whole chapter to the importance of education investments.

Epistemologically, the Bank's approach to knowledge is created discursively from economic theories. Historically, it follows the 18th Century classic economic theory to the most recent Robert Solow's (1956) neoclassical economic theory, in which "economists sought to endogenize technological progress", a process that is known as "total factor productivity" (World Bank, 2007, p. 6). The main idea behind the new growth theory is that growth is "determined by extra-economic, exogenous factors" (ibid), hence the investment priority given to education institutions and their focus on learning and innovation, as they are directly here seen as conduits of economic growth. Investment in education is seen in this theory as facilitating the effective use of knowledge and innovation, something that according to the Bank is essential for knowledge to contribute to growth.

Following the idea that knowledge contributes to growth as long as is made to work, the Bank has a similar view of the relationship between knowledge and the environment. In that sense, knowledge innovations in agriculture, through the production of improved strains, have saved India from starvation, have cured indigenous tribes of endemic diseases and can contribute to the prevention of natural hazards through for example satellite technologies (Word Bank, 2007, p. 7-9). The Bank refers to three cases of underdeveloped countries to illustrate how knowledge in these areas of the world can advance development. Although these knowledge advances are of major importance to local populations, the drawbacks that come with scientific interventions as well as the ownership of the constructed knowledge often remain hidden from its discourse. It accrues that it is not a mere knowledge acquisition matter but a discourse that involves political decision-making and the deployment of power relations and government techniques.

To better understand the 'right kind of knowledge', the Bank has divided the knowledge economy policy priorities into four pillars: "the country's education and training base, its information and telecommunications infrastructure, the innovation system, and the overall business and governance framework" (World Bank, 2007, p. 23). These pillars are used by the World Bank as benchmarks, to measure, categorise and compare individual countries' development against this framework. The disciplinary discourse underneath this system is based on econometric science and statistics and it constructs causal relationships between the development of knowledge economy and economic growth (World Bank, 2007, p. 23).

The metaphor of engine "as the key engine of economic growth" (ibid) that the Bank uses to describe this renewed vision for growth puts knowledge as mentioned before at work, as only then it becomes productive and thus useful to the economy. In a sense, knowledge becomes the new product that a post-industrial society aspires to produce, only that now is more intangible and volatile than the previous industrial rigid materials. In alignment with that materiality, power relations and governance technologies also change to resemble this intangibility and flexibility of knowledge production systems that transcend traditional rigid bureaucracies, leadership, local space and traditional disciplinary boundaries.

To produce the above subjectivities, the first and crucial pillar of the Bank's knowledge as development strategy is the education sector which can provide the system with "educated and skilled workers who are able to continuously upgrade and adapt their skills to create and use knowledge efficiently" (World Bank, 2007, p. 23). Of major importance to this strategy are also keywords such as lifelong learning and globalisation that widen and diffuse the scope of education and can also create new markets. The education sector is also mentioned in the 3rd pillar as 'an effective innovation system' that "is composed of firms, research centres, universities, consultants, and other organisations

that keep up with new knowledge and technology..." (ibid, p. 24). Here the focus is turned to tertiary education and especially research incentivisation. The Bank's vision for education and knowledge is characterised by economic incentives and it could be argued takes on a pragmatic and straightforward approach to learning and education that of service to economic growth and competitive, global markets that could reshape education space and time toward more flexible, extended and global structures.

The tool that the World Bank uses to assess knowledge economies is called Knowledge for Development (K4D) program, which is comprised by "a database and a set of indexes to measure countries' progress on the four KE pillars" (World Bank, 2007, p. 28). This Knowledge Assessment Methodology (KAM) entails 80 variables that vary from annual GDP growth to information infrastructure. Education comes as a discernible set of variables that measure education achievements quantitatively from schools' enrollments to different levels of education to innovation and research that refers to the university level. Although the KAM is considered a highly advanced tool in measuring competitive knowledge economies, it is argued in the report that its basic drawbacks are "difficulty of quantifying innovation" and "problems in data availability" (World Bank, 2007, p. 29). As indicated by the Bank the tool is complementary to other international institutions comparative tools:

The benchmarking elements in the KAM complement those used by other institutions. 1. The methodology of the United Nations Industrial Development Organization measures countries' capabilities for catching up with other countries. 2. The methodology of the World Economic Forum measures competitiveness assets (ibid, p. 30).

Since education enrollment and innovation are considered an index of development in all of these measurement tools, it could be argued that education from early years to primary to tertiary has a domino effect on economic growth. In other words, the better a country performs in primary education will affect secondary and then tertiary enrollment rates, which is considered a development variable. Education is seen through a competitive advantage standpoint and since the comparison is made between different levels of development it comes as no surprise that mainly the West dominates the competition. This is reinstated by the Bank as follows:

The positive correlation between the results of the KEI and the level of economic development does not establish a causal relationship—a high KEI will not necessarily produce a high level of economic development. On the other hand, it is plausible that high-income countries, because they are more affluent, are able to afford greater investments in knowledge and thus score higher on the KEI (p.30).

Thus, a development inequality discourse is continued here through knowledge for development practices of measurement/comparisons. It could be argued at this point that the quantitative/statistical tools developed to compare competitive knowledge economies are structured in a way that reproduces development inequality and its advantageous for countries which had previously developed their fiscal economies.

The new econometric model that captures economic growth per worker according to the knowledge economy model of development, adds the knowledge economy index, assuming that it is the index that captures the total factor productivity growth and also uses GDP per capita income to minimise problems associated with equating one countries' development if not account for initial income. It accrues from this that the knowledge variable is an addition to the previous model of the accelerated growth rate of a worker and the country's income. In this new growth modelling, education directly influences growth rates and it is valued in quantitative terms.

growth of output per worker = α + β 1 [real GDP per capita 1996]

+ β2 [growth of capital per worker]

+ β3 [KEI 1995

Box 6. Estimating Equation of measuring knowledge economy between 1996-2004, source: The World Bank, 2007, p. 39

How can economies or individuals turn into competitive knowledge economies or competitive knowledge workers respectively? According to the Bank, there are four key attitudes that lead to success in this regard: "determination, vision, openness and pragmatism" (World Bank, 2007, p. 49-50). All four are connected to economic and policy discourse and are aspiring to create competitive economies. For example, the World Bank frames determination as follows:

A KE-based approach requires determination. Adherence to the so-called Washington Consensus on policy reform—which calls for macroeconomic stability, deregulation, trade liberalization, and privatization—is not sufficient in itself. Policies need to address all intangible assets and sources of growth— education, research, information, communication, and entrepreneurship—in order to foster and apply knowledge throughout the economy (World Bank, 2007, p. 50).

Knowledge is thus enclosed in an economic discourse and made to work for the economy, and in this case, for the neoliberal economic model. But knowledge is not only utterly instrumentalised in this narrative, it also constructs an instrument of government in itself forming the main narrative of development. There is no better example than the knowledge economy narrative to describe and understand Foucault's power-knowledge-subjectivity triangle and its application to governmentality. In that, it is the interplay between knowledge and policies that shape individual subjectivities and that pertain to the core of a post-industrial model of government for continued progress through economic growth. This is visible if only one takes notice of the frequency that verbs like 'enhance-expand-extend' are used in its KE-related Government Action (p. 54-55). These E-verbs highlight the growth narrative in all social/environmental development sectors and are indicative of a high-speed society as well. Growth and speed are perhaps the main discourses that describe this policy agenda for progress and development. Indeed, as has been shown elsewhere this has been the main focus of modern nations from at least the 1960s onwards (Schmelzer, 2016).

Another point to be made is regarding the Bank's view on culture. The World Bank recognises the importance of culture in shaping development strategies. More specifically, it historically refers to two

main cultural discourses that have shaped the world, the Western and Eastern and give them different traits. While the Western is characterised by individualism and is choice-driven, the Eastern is based on more contextual, collective characteristics and is obligation-driven (World Bank, 2007, p.64). The Bank takes a neutral stance and seems to favour the notion of diversity when comes to culture as it argues that the "globalization process, instead of leading to uniformity, pushes civilizations and nations to intensify their specificities..." (ibid, p.65). However, open this stance may seem, the Bank follows a straightforward business managerial strategy that is based on deregulation, venture capital, foreign investment, export growth and ultimately market management techniques that form a distinct economic culture. Thus, this kind of management it could be argued, may make culture redundant or overshadow other forms of "culture as management" (Kendall, 1999b). This is linked to how the Bank describes education at the level of subjectivity formation, where it states:

Education creates choices and opportunities, reduces poverty, and gives people a stronger voice in society. It is the fundamental enabler of the knowledge economy. Well-educated and skilled people are essential for creating, sharing, disseminating, and using knowledge effectively in a global environment that is radically changing the types of skills needed for economic success (World Bank, 2007, p. 117).

Throughout the chapter, "Upgrading Education" in the World Bank's report, the 'scaling-up' of educational systems is analysed as it is considered crucial for the development of knowledge economies. Especially, emphasis is given to the development of technological subjectivities as "a better and more broadly educated population tends to be more technologically sophisticated, thus generating quality-sensitive demand for advanced goods" (ibid, p. 117). Here education is constructed as a mediator between markets and technological innovations that also produce consumers demanding quality products. The power of education to shape consumer preferences is highlighted here and it is perhaps one of the most pivotal roles that education is asked to perform in the era of climate mitigation strategies. Education could indeed contribute to promoting less environmentally harmful lifestyles, but the Bank only refers to tech-smart and efficient ways to encourage innovation, thus promoting its

preferred technological subjectivity. Again, there is no direct link here to any sustainability discourse that stems from ecological and/or social science or indigenous knowledge.

In addition, education in the knowledge economy needs to create the new adaptable subjectivity who is, according to the World Bank, a person with "the ability to acquire new skills, act autonomously, use tools interactively, and function in socially heterogeneous groups" (World Bank, 2007, p. 117). To achieve these skills, low-income countries should focus on Education for All (EFA) targets and improve enrollments and quality, while middle-income countries should strive for quality education and reduce drop-out rates (ibid, p. 118). Again, there is no reference to any type of sustainability education or the contribution of education to sustainable development. The main strategy is improving and scaling-up the education as a mechanism of development in itself with the emphasis being on traditional learning subjects, basically language and math.

This rather reductive way of seeing education is also manifested in the indicators the Bank uses to measure knowledge. It also uses as a guideline the Global Knowledge Index (GKI), which was developed by UNDP in 2017.

The GKI is a composite index consisting of seven sub-indices that highlight the performance of six sectors (pre-university education; technical and vocational education and training (TVET); higher education; research, development and innovation (RDI); information and communications technology (ICT); and economy), and a composite index of enabling environment that measures the social, political and economic contexts of those sectors (UNDP, 2017, p. 19).

The UNDP recognises these sectors as interactive, and thus each contributes to each other to succeed in effective knowledge systems. Although the report highlights the need to link the SDGs with the education indicators, particularly in the pre-university education sub-index there is no link of either education input or output with the SDGs. In particular, the index is divided into two main sub-pillars, namely 'knowledge capital' and 'educational enabling environment' and none of these incorporates sustainability into its content, which measures enrolment and completion rates, GDP% in education, access to computers and assessment of 15-year-olds etc. (ibid, p. 30). Although there is an overall concern about integrating sustainability in education quality there is an overall lack of implementation and consideration of such initiatives, something that could be considered as an incapacity to incorporate such indexes or substituting obsolete indexes with ones that consider integrating environmental and social justice frameworks.

Returning to today, there's a shift to the Bank's discourse, mainly affected by the pressure that climate science brought to the fore. In that discursive climate, the Bank has incorporated climate mitigation and adaptation discourses into its reports, with the latest titled: "Climate and Development: An Agenda for Action, Emerging insights from World Bank Group 2021-2022 country climate and development reports". It could be argued that this report accompanies the 2022 World Development Report titled: "Finance for an Equitable Recovery", which places as its centre of concern the fiscal gaps and economic debt induced by the pandemic and relative strategies to overcome it at the country level. The Report's language is highly economic and focused on economic recovery and managing risk discourses and for that, it is not going to be discussed at great length. The only point worth mentioning for the purpose of this study is that there is no reference to the previous knowledge economy discourse as the onus is now on recovery. One more thing that is of interest here is that the Report mentions at the end that one of its policy priorities for the recovery is "supporting the transition to a green economy", which means that "economic policies for the recovery should aim to support sustainable growth by facilitating the reallocation of resources to green sectors and business models" (WB, 2022, p. 249). Most of the strategies for mitigating climate change can be found in the first document that has been mentioned. From that Report, it is worth noting that the Bank supports the 'just transition' discourse, as well as endorsing the Paris Agreement (p. 33). Nonetheless, reducing emissions discourse is seen as affecting positively the economy, as it is mentioned:

...if actions are early and well designed, the impacts of decarbonization on GDP and growth will be small, ranging from slightly negative to slightly positive, with more positive outcomes in energy-importing countries and those with large renewable potential (World Bank, 2022, p. 35).

In terms of the knowledge and education discourse in connection to climate change of interest are two more recent World Bank documents, the 2010 and 2018 World Development Reports, focusing on climate change and learning respectively. In more detail, the climate change report refers to "a climate-smart world" which in a sense redirects the knowledge economy discourse towards a climatesmart discourse. This entails, according to the Bank, "a transformation of our energy, food production, and risk management systems" (World Bank, 2010, p. 10). Although there is no direct link between climate change and education, the Bank mentions that this transformation will require new knowledge and skills. In this, it refers to natural capital, physical capital and human health, and within those, some respective disciplines, such as crop science, building infrastructure and genomics just to mention a few, as bringing about the new knowledge needed to tackle climate change (ibid, p. 19). Education as an institution in need of transformation, accordingly, is mentioned by the World Bank in a small section at the end of the report where it cites:

Incorporating climate change education in school curricula is a first step. Developing a new cadre of professionals to tackle the complex problems posed by climate change is equally important (see chapter 7). Finally, an educated citizenry is essential to facilitate change. Research shows that students and the general public hold onto misunderstandings about various aspects of climate change, the greenhouse effects, and ozone layer depletion. To address these shortcomings, the public must be informed about climate change accurately and systematically (ibid, p329).

Then in the 2018 report "Learning: To realize education's promise", the Bank focuses throughout the

report on the learning crisis which is conceptualised as follows:

This learning crisis is a moral crisis. When delivered well, education cures a host of societal ills. For individuals, it promotes employment, earnings, health, and poverty reduction. For societies, it spurs innovation, strengthens institutions, and fosters social cohesion. But these benefits depend largely on learning. Schooling without learning is a wasted opportunity. More than that, it is a great injustice: the children whom society is failing

most are the ones who most need a good education to succeed in life (World Bank, 2018, p. 3).

The Bank then suggests three main ways through which this learning crisis can be tackled. In a nutshell, these are: to "asses learning", to "act on evidence" and to "align actors" (ibid, p.16). In that, the Bank emphasises the importance of measurement in education and comprehensive learning metrics, while it maintains that there is "too little measurement" (ibid, p. 17), despite the measurement culture critique in education that maintains the opposite (Biesta, 2010; Grek, 2009; Robertson, 2021). Education here is seen through a discourse of lack in student attainment, especially for developing countries when compared to the more developed in language and math acquisition. Even though the development of literacy and numeracy are crucial in tackling complex problems, including climate change, there is no direct reference to climate change literacy incorporation in the curriculum to contextually reflect climate change action as mentioned in the previous Bank's statement in 2010. In that sense, it could be argued that to the learning and knowledge levels, the Bank does not systematically suggest a discursive move toward, for example, education institutional shifts that incorporate climate change. Instead, learning and education are linked to the economy, especially to jobs and the market economy as has been discussed to an extent earlier through the concept of knowledge economy.

The most recent work of the Bank on sustainability is comprised of its Global Programme on Sustainability (GPS), which seeks to embed ecological thinking into its accounting model and "The Changing Wealth of Nations' (2021) a database report that introduces the world's natural resources as assets. In a nutshell, "GPS provides global data and analytical tools on Natural Capital and Ecosystem Services to spur the international debate on the economics of sustainability and to provide entry points for country level engagement. The importance of this information has been underscored by the Dasgupta Review (released in February 2021)" (n.d., p. 9). These reports perpetuate the idea of nature as disconnected from human societal development, let alone education and regard nature as an asset in economic language.

Lastly, the World Bank gives out some comprehensive guidelines regarding education governance in the knowledge economy. In a nutshell, the Bank promotes a more decentralised, learner-centred, multisectoral, quality and linked-to-market governance than the previous compartmentalised, sectoral, institutional and national assessment driven governance system (World Bank, 2007, p. 130). It is a highly liberalised agenda or neo-liberal to be more precise (Olssen & Peters, 2005).

Many theorists have linked globalisation and the knowledge economy discourse with the rise of the neoliberal agenda (Bonal, 2002; Dale & Robertson, 2005; Olssen & Peters, 2005; Patrick, 2013; Robertson, 2005; Slobodian, 2018). Drawing from a Foucauldian perspective, Patrick, (2013) regards education as a specific set of discourses, especially neoliberal that "aimed (wittingly or unwittingly) at governing the self" (p.4-5). The Foucauldian theory of the technologies of the self, stresses "how individual subjectivity is constituted by discourses of power" (ibid, p. 5). In that, Patrick (2013) discusses the role of education as a technology of reproducing the "commodified self" as neoliberalism penetrates the education agendas as well (p. 1). According to the latter knowledge economy should though be regarded as something bigger than just a branch of neoliberal policies and the three interrelated discourses of neoliberalism, globalisation and knowledge economy are discourses that create the modern subjectivity of the "commodified self" (ibid, p.2).

In education, neo-liberal reforms have come in the form of changes in the traditional professional environment of academic work to more "consumer-managerial forms" especially in tertiary education led by competition, productivity and accountability technologies of control (Olssen & Peters, 2005, p. 328). More specifically for the knowledge economy, Olssen and Peters argue that it is a discursive construct between the New Growth Theory and the value of knowledge in Western economies, adopted by key policy organisations, namely both the OECD and the World Bank (p. 333). They specifically stress, though, that not all knowledge is easily market-led and that "factual knowledge and scientific knowledge...come closest to being market commodities or economic resources..." while 'tacit knowledge' is presented usually in the form of soft skills although it is increasingly recognised as valuable for the market, it is not easily controlled or measured (p. 334).

While the OECD saw the connection between the future Western economies and knowledge, the World Bank with the Knowledge for Development Report (1998), saw the connection between knowledge and development, thus creating a whole new purpose for development policies, aid and putting countries in new comparative frameworks, that of knowledge gaps and knowledge problems (Olssen & Peters, 2005, p. 335). The two institutions along with UNESCO have created a global public good discourse around the benefits of education/knowledge and the economy and well-being of individuals and of society. This construct is not static but rather it keeps being enhanced in a life-long learning environment, with sustainability discourses being added to this model of development. Although this model of the knowledge economy has been crucial in advancing neo-liberal policies around the world, Olssen and Peters (2005) stress the importance of local knowledge and indigenous knowledge systems for sustaining the knowledge economy construct along with global networks of knowledge transfer (ibid., p. 335). Thus, we could argue at this point that processes of globalising neoliberalism exist in simultaneity with local responses to such processes and local knowledge production that is not only spontaneous in its creation but also necessary for the continuation of the knowledge economy, which tends to integrate it to its function. As Foucault argues knowledge accumulation and dissemination is a rather complex system of power relations:

We live in a social universe in which the formation, circulation and utilization of knowledge presents a fundamental problem. If the accumulation of capital has been an essential feature of our society, the accumulation of knowledge has not been any less so. Now, the exercise, production and accumulation of this knowledge cannot be dissociated

from the mechanisms of power; complex relations exist which must be analyzed (Foucault, M., 1991b, p. 165, cited in Olssen & Peters, 2005, p. 340).

Green (2022) notes the incapacity of current theoretical models of Comparative Political Economy to engage with environmental issues in its analysis because of the causal mechanisms that the disciplines use and through which nature is regarded as independent from social/economic systems. He then goes on to suggest that in order for the discipline to contribute to socially desirable sustainable transitions, it needs to halt its "unecological assumptions" and adopt "transdisciplinary insights, from ecological economics to Earth Systems governance" (Green, 2022, p. 2) and I would add degrowth theoretical underpinnings that highlight ecosystems balance and unlearning growth. As Green (2022) continues, social science is a discipline developed in parallel with economic growth models and especially during the valorizing economic growth era of the 1960s, it made environmental problems that come along with economic growth invisible. "Three quarters of human-induced carbon dioxide emissions into the atmosphere occurred post-1945" ... and along with acceleration and growth in production and consumption has led to the 'growthist optimism' mentality being neglectful of the consequences of overconsuming the Earth's resources (p. 5). However, according to the latter, economic growth discipline was not the only one that existed at the time and ecological economics was also a growing field that was kept, though, to "a shadow status" (p. 5). Nonetheless, as Schmelzer, (2016) has also shown the seeds of ecological thinking were planted around the 1960s but only started to gain prominent status in recent years and especially after 2015 with the SDGs. This historical event inaugurates a period where ecological thinking and sustainability discourses become a subject of management for global forces as well as individual well-being. For example, The World Bank by adopting in its discourse the green growth agenda and SDGs, Green (2022) suggests, "stress capitalism's compatibility with sustainability..." (p. 3).

4.4. Conclusions

In this Chapter, I have presented the policy discourses for sustainability in education OF UNESCO, OECD, and the World Bank. Through this analysis, I have tried to examine more closely the historical contingencies that have laid these organisations to certain discourses of development that I started exploring in Chapter Two.

In a nutshell, UNESCO's discourse suggests an open-ended, multi-stakeholder, synergetic and holistic strategy for Education for Sustainable Development through the global citizenship framework. It could be argued that UNESCO's discourse on 'sustainable contraction' and 'sustainable consumption' highlights the importance of 'degrowth' in the North for global sustainability. Education, in this regard, is considered a vehicle in terms of its capacity to generate earth-centric values. Still, on many occasions, the means of implementation of ESD collide with its core values. On the other hand, OECD's statistical tools, like PISA and TALIS, are mechanisms through which education to a great extent has become measurable, thus spurring comparisons across nations linking education more closely to economic growth. Nonetheless, OECD's approach to sustainable development is 'synthetic', as it seeks to balance economic growth with social cohesion, well-being, and environmental stewardship, prioritising development language. The World Bank overextends the economic growth model to education through its 1990s 'knowledge economy' conception, and it makes knowledge 'work' for development, mainly by investments in Edtech and technological innovation. It could be argued at this point that all three institutions endorse the SD agenda in their discourses. However, SD takes different nuances under each organisation's framings and although sustainability is seen as leading to 'healthier' societies, the discourse on comparison, competition and growth co-exists with the 'deceleration' imperative.

Considering these insights and having laid out the discursive power and historical significance of three major institutions in the advancement of sustainability models, I next turn to alternative, ecological perspectives in development policies. I will discuss social-ecological perspectives and how they can contribute to restoring a sense of balance in an integrated environment and society approach. This is essential to have environmentally engaging theories and it attempts to explore such ecological transitions in the educational sector or other sectors adjacent to education that can promote "ecological complementarities" as Green (2022) suggests (p.13). Education, it would be argued, should be at the forefront of these ecological transitions and sustainability transformations in education could have a domino effect on the ecological orientation of other institutions as well. It is thus important to examine the possibility of such ecological discourses in education management and the overall reconstruction of education under these circumstances.

Education as an institution can be low-carbon or totally decarbonised, sustainably sourced, a conduit of sustainable lifestyles and well-being mindsets and contributing to local biodiversity conservation and/or sustainable city movements, generating knowledge for sustainability teaching /learning and management, reconstructing economic growth mentalities, and building communities organised around sustainable values. In the next chapters, I begin to examine some of the tenets of these discursive statements and therefore some of the 'negating' discourses to the neo-liberal globalisation model.

CHAPTER FIVE

NEGATING GROWTH: DEGROWTH AND OTHER COUNTERHEGEMONIC MOVEMENTS

5.0. Introduction

As the title of this chapter suggests, I am to explore discourses in contemporary socio-political theory that aim to negate the discursive practice of eternal economic growth, as has been described in the chapters so far in this section, and as I have shown were adopted by major economic and cultural institutions in the previous chapter. There are though resisting forces to the model of economic growth that have been present from as early as economic growth and GDP accounting, they have only recently gained a more prominent position in academic and socio-economic discussions, mainly through the climate change crisis and attendant discourses. In what follows, I elaborate on: (a) what could be thought of as an ecological turn in socio-political theory: (b) the interconnected political ecological and degrowth perspectives; and (c) the post-capitalist view on development based on a feminist reading of the political/economic.

5.1. Ecological Transformation and Political Ecology Perspectives.

Theories of growth that have dominated natural and social sciences are closely linked to the idea of the egotistical gene in biology, an atomistic theory that assumes that competition and accumulation are what keep organisms and whole populations alive and thriving. Growth is considered a survival strategy in biological science, but it is not the only one among various populations and between species. This grow-or-die discourse has been deconstructed, for example, in new biology theories that see organisms as much more complex, reciprocal and ultimately ecological entities. In these theories, living is achieved through forming ecosystems and "webs of life" that are reciprocal and cyclical, not hierarchical and horizontal as atomistic social and natural science teach us (Peter, 2021, pp. 112–114). In a sense, survival depends much more on the variety and quality of the relationships that organisms build with their surroundings; an idea that has been fervently advocated by American social ecologist, Murray Bookchin, who talked about "synthetic environment" (Bookchin, 1974). This idea of the ecological as a strategy, a management of life, if you will, under synthetic/reciprocal conditions, is the overarching scope of the following chapters.

According to Weber and other authors, it is therefore not the selfish gene that dominates in nature, but the existential desire to share, copy and diversify genetic information – within and beyond one's own species (Peter, 2021, p. 110).

Taking the theoretical underpinnings of the ecological shift into consideration, I begin by juxtaposing this ecological discourse to the previous economic growth models of development in an attempt to map out their differences and the implications that these have on institutions, such as education. For this exploration it is fruitful to expand further into the meaning of the ecological turn in social sciences, drawing, first, from the work of Félix Guattari and his ethico-aesthetic paradigm in his work *The three ecologies*' (1989) from political ecology, and second, the eco-pedagogical literature as conceptual territories that regroup social sciences under an ecological understanding of the relationship of society to nature.

To begin with, there is a shared theoretical presupposition amongst many eco-theorists that characterises the ecological turn which, in a nutshell, is a qualitative distinction between the concept of development and that of transformation (Guattari, 1989; Misiaszek, 2021). The word development

has been substituted by that of transformation to denote the constant human need for progress and evolution without falling back into the same parochial concept of development as economic growth. This distinction is important if we think of development as a historically bounded process linked to industrialisation, modernisation and the economisation of society and the environment, seen through a linear progressive history narrative. On the contrary, transformation connotates a non-hierarchical, sometimes haphazard, spatiotemporal arrangement and set of movements toward change, that can be multivariate and multidirectional and indeed transdisciplinary in the sense that it transforms traditional disciplines from being closed off from the world and the environment, including in social sciences (Green, 2022).

To begin with, an ecological, ecosophical or eco-aesthetical, paradigm differs from the traditional scientific developmental discourses found in classical Darwinist biology and neo-classical economic theories. In contrast, the ecological forges connections with post-human theoretical underpinnings (Guattari, 1989; Peter, 2021). In post-humanist agential theories from authors like Barad, Latour, Guattari and others, the onus is on understanding that ontology and nature lie within the relationship between two or more entities and their intra-actions that co-create realities. Thus, the world is not static, not a substance, "not a thing but a doing" (Barad, 2007, p. 151, cited in Peter, 2021, p. 98); a theoretical manoeuver that breaks with the idea of universal laws and linear progressivist history. This framework can provide useful tools in understanding and organising social institutions, including education, that are open and ecologically adaptable to an ever changing social and natural reality.

To arrive, though, at this ecological framing, we must first interrogate common modern biological discourses around maximisation through offspring and gains, or in other words the egotistical gene theories as already briefly mentioned above. In these theories, humans are "egotistical utility maximizers", according to the idea of the "survival of the fittest" that stems from social Darwinist

conceptions of nature, and ideas around the human gene as a selfish molecule expressed by biologists like Richard Dawkins (Peter, 2021, p. 94). Peter (2021) also cites Alfred North Whitehead to indicate the non-living character of the human condition implicit in these theories that create the subject known as 'homo oeconomicus'. In that, he cites:

The art of persistence [in comparison to the art of living] is to be dead. Only inorganic things persist for great lengths of time (Whitehead 1958: 4, cited in Peter, 2021, p. 94).

Similar to the above quotation, Irwin (2017), drawing from Heideggerian philosophy, argues that it was "modern storage" technologies that "changed the relationship of people to materials, to place, and to things themselves by substituting seasonal qualities to quantities dictated by consumerism" (p. 381). This notion of persistence, progress or growth, is the most common narrative we use in a Northern context to give meaning to ourselves and to the world and is rooted in the Enlightenment project. In this historical event for Western scientific discourse, mathematical and scientific ideas were crucial in creating "a clock-like machine" world, governed by a hierarchical dualistic social reality of the mind over the body and of human over nature (Peter, 2021, p. 100). In an ecological understanding of the world, this dualism, according to the latter, should be substituted with more holistic worldviews through processes of knowledge as co-creation, the interaction between society and nature, and the individual with other entities. This knowledge framework implies a break with Cartesian dualism and a simultaneous openness to the world of possibilities.

The ecological shift in Western discourse coincides with new scientific discourses in physics and biology disciplines. From the 1970s onwards, there is in biological sciences as well as in physics, a shift from discourses of rigid natural laws towards relativity theories in physics and from "mechanic conceptualization of life" toward network concepts of socio-environmental reality (Peter, 2021, p. 101-103). In addition, and what is of major conceptual importance here, are notions of "embodied cognition" that reshape the meaning of living organisms as autonomous and self-organizing entities

rather than as beings controlled by unbreakable natural laws dictated by hostile environments. This is a widespread conceptualisation of individuals as thriving through competition with each other. Peters (2021) discusses this topic drawing from recent scholarship in biology science and biologists like Humberto Maturana (1928*), Francisco Valera (1946-2001), Fritjof Capra (1939*) and others. These theorists bring to the fore an understanding in biological processes, through the notion of "embodied cognition" (Peter, 2021, p. 102) (Peters, 2021, p. 102). This processual, sensory knowledge could be understood as an awareness that ontology consists of a relationship, rather than a thing, between the surroundings (environment) and the tools (knowledge) organisms use to cope with/understand and interact with their surroundings. The difference from previous cognitive theories is that this one suggests that knowledge and cognition are not always conscious and that living organisms, including humans, are learning through processes of self-organising via what seems "trustworthy regularities" that can translate into relations (ibid, p. 104). In simpler words, we learn and we become by forging relationships with others and with the environment, and this is a process rather than an outcome or specific conscious knowledge. It thus de-centralises the knowing subject and subsequently knowledge regimes.

Seeing reality as a relationship between oneself and others completely changes the atomistic way of seeing the world as individual compartments of categories of things. In comparison to growth and competition, Peters (2021) posits the co-creative notions of diversity and abundance, as core survival strategies of populations and organisms. That is, it is not growth but rather equal and diverse exchanges that can contribute to ecosystems' living through networking. Peters explicates this in the below citation:

To understand this notion of diversity as a means for survival, we must turn to another basic concept in Weber's theory of biology and ecology: It is not competition, but rather 'gift-giving' and mutually interdependent 'networking' that undergirds the life cycles of ecosystems. In this sense, Andreas Weber argues that nature's resources exist in relative abundance and that they are also provided to other living beings as gifts. The most obvious examples of resources being provided as gifts are those previously mentioned: sunlight, air, water, soil, genetic information and biological diversity (Peter, 2021, p. 111).

So far, it can be argued that perceiving the world through an ecological perspective presupposes a transformation of the way we interact with the world, from egotistical anthropocentric ways of knowing the world to reciprocal and ecological ways of being with the world. However, this is not a straightforward process, and its chaotic essence would be better explored via the artistic/aesthetic levels rather the scientific ones. Guattari's contribution to the idea of an ecological shift in human subjectivity is relevant here. Guattari, (1989) in the *'The three ecologies'* notes that an ecological understanding of societal problems is not a mere technico-scientific issue, as most popular media would have us think, but most importantly and primarily an ethico-aesthetic issue. For ecological change to happen there should be a fundamental transformation of the human capitalist psyche and in the field of subjectivity according to Guattari, who gives pivotal power to the micro-political for the transformation of social reality. In his viewpoint, ecology's primary point of departure is the production of subjectivities that escape the enframings of modern scientific discourse. The below quotation describes best what he calls "a scientific super-ego":

It is as if there were a scientistic super-ego which demanded that psychical entities be reified, understood only in terms of their extrinsic co-ordinates. Unsurprisingly, then, the human and social sciences have condemned themselves to overlooking the intrinsically developmental, creative, and self-positioning dimensions of processes of subjectification. In this context, there is an urgent need for us to free ourselves of scientistic references and metaphors: to forge new paradigms which are instead ethico-aesthetic in inspiration (Guattari, 1989, pp. 131–132).

The above, though, does not suggest a return to a pre-technological subjectivity, as for Guattari "the machinic phylum evolved in a way that introduces new opportunities for individual and collective creators to rework subjectivities in close contact with and overlapping machines" (Genosko, 2009, p. 87). Rather this transformation involves the machinic too and it is threefold, consisting of the
simultaneous reorganisation of social and individual practices "...under three complementary headings: social ecology, mental ecology, and environmental ecology" (Guattari, 1989, p. 34). The subjectivity in his framework is deemed powerful, creative, and ever-changing. The work of emancipatory and ecological praxis is, according to Guattari, to (i) recognise and intervene in the formation of subjectivity; and (ii) to find the modes of the production of subjectivity and act upon them through ethico-aesthetic notions rather than the technico-scientific ones which dominate societal organising. What is important to stress here, however, is the heterogeneity and 'singularity' that characterise the subject and alternative beings according to Guattari. That is to say that the subject, and to an extent identity, are not permanent and structured in rigid regimes but are flexible, changeable, and fragile. Identity moves, and so do human subjectivity and social relations. Movement is important in Guattari's (1989) thought as it generates power. We thus need to account for the velocity, frequency, and direction of movement. The task is thus to redirect social movements toward a not-for-profit logic, or eco-logic, as he would say.

We can trace connections here between Guattari's fluidity of the subject and the idea of the aforementioned biologists around the self-organising organism, and that its evolution/development depends on the feedback it produces in itself, but also on the intra-action with its environment and networks or ecosystem in simultaneity (Peter, 2021). To better understand what this implies for the human subject I cite Genosko's (2009) take on Guattari's understanding of the individual:

The Guattarian subject is not an individual, an individuated person, thinking and thus being...Rather, the Guattarian subject is an entangled assemblage of many components, a collective (heterogeneous, multiple) articulation of such components before and beyond the individual; the individual is like a transit station for changes, crossings, and switches...This subject is also polyphonic – of many relatively independent parts – because it assembles components in order to posit itself in terms of some points of reference (body, social clusters, etc.), in an existential territory, a field in which it is incarnated, but out of which it also ventures...Open and full of potential, this subject is truly a work in progress/process, outflanking both essentialist and constructionist postulates (Genosko, 2009, pp. 76–77).

This eco-logic is, then, first and foremost, a movement towards a not known outcome as opposed to structure and system that are considered repetitions of strictly delimiting discourses or simply connoting small groups of nature-lovers or single-oriented green politics. Ecology should open new spheres of being and should encompass all three realms: the environmental, the social and the psychic. For that, art plays an essential role in Guattari's analysis as it replaces the rigidness of techno-scientific knowledge with an alternative - artistic exploration. In this, art acts as an outward activity; that which can enunciate the alternative visions of societal practice and experimentation.

For Guattari, art begins with the expressive features of a territory that become for its inhabitants flight paths beyond its borders. Art begins not with a home but with a house, not with inner-directness, but with outer-directedness... (Genosko, 2009, p. 82).

In this outwardness of the arts, Guattari seeks to find new emergencies that are primarily qualitative transformations of subjectivity, and thus "Guattari's concern with the quality of subjectivity is what holds together art and ecology" (Genosko, 2009, p. 79). For Guattari, as we read in Genosko, ecosophy's work is to understand how subjectivity is produced under the 'three ecologies' complementary roles. The onus for Guattari for a critical ecological transformation is not the development of the techno-scientific edifice that can resolve some environmental issues (he does not reject technology and science in general), nor an expanded subjectivity toward "a pre-given self, but processes of singularization that resist the frames of reference imposed by an identity...yet bear upon everything concerning the way one lives, feels, thinks, and acts." (ibid, p. 87). In other words, change in the mentality of being is the process of transforming social and environmental problems. This is explicated through the notion of emergence, and singularization through the arts.

Emergence in this sense is not toward a higher level of abstract integration but is something that must be continuously confronted and permanently reappraised. Art can provide a model for subjectivity's heterogeneous and ecosophical explorations, without betraying its singular textures and crushing its desires (Genosko, 2009, p. 85). Drawing thus from a Guattarian sense of the meaning of ecology, the latter is conceived as eco-praxes that transforms the subjectivity in ways that align with ethico-aesthetic practices in a non-predictable, experimental fashion. In this regard, "Ecology...must stop being associated with the image of a small nature-loving minority or with qualified specialists' in the rebranded environmental" (Guattari, 1989, p. 79). Instead, what is sought out here is the ontological means to stretch the capacity for outwardness, for ecological transformation in mentality and subjectivity. Thus, the ecological turn does not refer here to mere green politics or the ecological sphere of environmental science, but to emergent, outward modes of subjectification with the arts considered the closest activity for expressing and materialising this connection.

5.2. Political Ecology

It is perhaps in political ecology that the ecological turn in social science finds a house. Briefly, political ecology is an approach to research that, from the 1980s onwards, has been met with growing participation from a variety of disciplines, from anthropology and geography to economic and political sciences. The field is described by Paul Robbins (2011) "as an intellectual investigation of the human-environment interaction, and as a political exercise for greater social and ecological justice, and it does not follow strict disciplinary boundaries" (D'Alisa et al., 2015, p. 45). Thus, political ecology "advocates an eagerness to explore a plurality of knowledges and a diversity of practical actions, including those of non-dominant groups" (Susan Paulson in D'Alisa et al., 2015, p. 45). This sits well with previous insights on thinking/acting in ways that might contribute to sustainability and social ecology. By making social structures uncomfortable and by breaking traditional disciplinary boundaries, it is a thinking in ways that transform.

An ecological framework, seen through a political ecology lens, can ground the former in local struggles for sustainable land and resource use, local climate change implications, and environmental degradation. Most importantly, political ecology resonates with the theoretical contestation of the growth narrative in social and natural sciences and its prevalence as an orthodox theoretical underpinning. This paves the way for a critical stance in political ecology that accounts for social inequalities in conjunction with environmental problems. It is perhaps the social inequality framework that resonates with an ecological understanding that complements its scope as a meaningful discourse in social theory in general, and education theory, in particular. This is best articulated in the quotation which follows from Susan Paulson (2015) that highlights the power relations that underlie environmental issues (indent long quotes and no parenthesis as below:

These new areas of study interrogated key foundations of Western academia: the dichotomy between nature and culture, the universality of reason (and of homo economicus), the adequacy of conventional disciplines and the neutrality of Western scientific categories and findings... It also enabled political ecologists such as Alf Hornborg to theorize power as both material and meaningful, expressed through unequal control of resources, including human labour and energy, and exercised in the formation of social systems through which these inequalities are maintained, notably via cultural mystifications that naturalize social constructs such as the power of the machine and the representation of labour and nature as commodities (D'Alisa et al., 2015, p. 47).

A political ecology framework can thus complement the above ecological understanding of subjectivity by acknowledging the structural and historical colonial relationships that the modern growth model has imposed on people and the planet. The antagonistic relationship between the modern lifestyle and the well-being of people and the planet has been articulated in the comparison between "development versus subsistence" in the ecofeminist political ecology (Mies & Shiva, 1993). In this regard, the latter have noted that in Northern contexts people suffer from "a kind of schizophrenic or "double-think state" in which they own all the information regarding the unhealthy lifestyles they lead. Nonetheless, they choose to continue to believe in the myth of unlimited growth

and thus stay inactive in implementing meaningful social changes (Mies & Shiva, 1993, p. 57). Similar to Guattari's (1989) observations of the scientific super-ego and the inability to act pro-socially or ecologically, political ecologists contemplate economic growth subjectivity and its effect on both society and the environment.

5.3. The Degrowth Proposal

To answer the question, what is degrowth, it is pertinent to begin by recognising the ecological limits of resource use, a topic reluctantly recognised only recently due to the human induced climate change discourse. This has led scientists from both the social and natural sciences to contest the notion of economic growth as the rightful path to human flourishing (Latouche, 2010; Schmelzer, 2016; Smil, 2019; The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind / Donella H. Meadows ... [et Al.]., 1974). The environmental costs of development have, until recently, been ignored in economic growth calculations as an "externality" to the economy, as if economic growth is independent of natural material input and natural cycles (Irwin, 2017, p. 380). The idea of sustainability, also adopted by such institutions traditionally supportive of the economic growth model (such as the World Bank and the OECD), is an attempt to incorporate the subject 'environment' into the economic growth model without however addressing its fundamental contradiction. This means that by the moment you arrive at the recognition of ecological limits, there should be an activation of limits for resource use and thus a contraction of the expansive economic model (D'Alisa et al., 2015; Irwin, 2017; Latouche, 2010). Perhaps this is the biggest contradiction of our times. Sustainable development may even exacerbate the issue, as it creates contradictory subjectivities, as Foucault would say, or "double-think" subjectivity, as Mies & Shiva have argued (1993, p. 57).

Our vision of the future has now incorporated goals for low-carbon emissions, but the way to reach these goals remains technocentric and coupled with the economic growth narrative. Those who are the main perpetrators can even pay their way out of their bad practices. Economic growth is still our immediate answer to most problems, whether environmental or social. It is the structure of certain questions that have, as their immediate response, more economic growth. Take for example poverty reduction strategies, or more ambitious poverty eradication discourse, which is the first goal in each global policy agenda from the MDGs (2000) to SDGs (2015). The problem is invariably answered by means of more production, more consumption, more economic growth. But what if the problem was set out to be extreme wealth and a more ambitious eradication of extreme wealth (see Piketty, 2014). Would then economic growth be the most suitable aim for this agenda? Or perhaps degrowth?

Under these circumstances, economists, politicians and activist movements have introduced the term 'degrowth' in the industrialized North (D'Alisa et al., 2015; Kallis & March, 2015; Latouche, 2010; Schmelzer, 2015) as a political and economic strategy to combat capitalist development. From a historical perspective, degrowth is a Western origin concept, coming from alternative sustainability sciences, such as ecological economics, social metabolism studies, economic anthropology, social ecology and political ecology (D'Alisa et al., 2015; Martínez-Alier, 2012). It is also a "political slogan" used as a provocation from radical grassroots environmental movements (Latouche, 2010). It is young, especially in the English dictionary, as it was only translated into English in a 2008 Paris-based degrowth conference (Martínez-Alier, 2012). For Latouche (2010), degrowth is "the abandonment of a religion: the religion of economy, growth, progress and development" (p. 519). This abandonment, however, is considered difficult if not impossible in an ever-expansive modern world. This difficulty in deconstructing growth is evident when trying to translate the initial French 'décroissance' ³ in English and Germanic languages. This, for Latouche (2010), is a problem whose causes are the limitations in imagining otherwise brought about by "totalitarian productivism" and the subjectivity

of "the unidimensional man, homo economus..." (p. 520). Thus, the translation of degrowth in English may come up as different but synonymous words, i.e. 'shrinking', 'downscaling', 'decreasing growth', 'powerdown', 'downshifting', 'uneconomic growth' and so on, which is regarded as a positive thing, considering the creative plurality in 'decrease' that degrowth calls for (Latouche, 2010, p. 519). Therefore, it could be argued that degrowth is an open-ended term of socio-political and economic transformations that aim to antagonize rampant economism at the material and discursive levels (D'Alisa et al., 2015).

Economically/materially, degrowth as Martinez-Alier (2012) argues, and also according to radical economists (Daly, 1973), "should lead to a steady state economy" after rich economies reduce their excessive use of material and energy flows on the economy (social metabolism). This reduction, however, is considered multivariate and it is contingent on "both physical variables and new social institutions" (ibid, p. 54). Degrowth also supports 'the environmentalism of the poor²⁴ against extractive corporations and their alliance with the conformist environmentalism of international organizations and NGOs, such as IUCN (International Union of Conservation of Nature) and WWF (World Wildlife Fund) (Anguelovski & Martínez Alier, 2014). It is thus considered a radical economic discourse as "it makes a novel case for limits without denying that scarcity is socially produced; and it embraces conflict as its constitutive element" (Kallis & March 2015, p. 360). Thus, on the definitional level, degrowth for Schmelzer, (2015) is "a planned contraction of economic activity aimed at increasing well-being and equality" (p. 264), or as Muniz & Cruz (2015) argue;

...degrowth can be defined as an equitable and democratic transition to a moderate economy that has more contained production processes and consumption and increases human wellbeing while enhancing ecological conditions in the short and long term and at both a global and local level (p. 10896).

Governing through GDP accounting and combating the narrative of perpetual economic growth on a finite planet, are the main points that the degrowth movement makes against the myth of well-being coupled with economic growth. Instead, its political programme is based on definitions of well-being through redistribution of wealth, basic and maximum income, carbon taxation, reduction of resource use, the idea of circular economies, and so on.

Discursively then, the overall focus of degrowth is the mental dissociation from the culture of economic growth. Degrowth calls for a deconstruction of dominant economism, as an environmentally and socially destructive 'mental infrastructure' and suggests a change in priorities in development language from growth to social and ecological well-being (Welzer, 2011). In this sense, degrowth shares similar concepts with political ecology.

Both degrowth and political ecology challenge dominant interpretations of the causes of environmental problems. Both contest the prevalent technocratic and economistic responses. Both are critical of sustainable development, and the promotion of commodification in its name. And both motivate political and practical action toward more equitable distribution of economic and ecological resources and risks (D'Alisa et al., 2015, p. 48).

Degrowth, then, asks for the linguistic decolonisation of concepts and ideas that are saturated with economism; something that is close to the previous conceptualisation of the ecological turn in social science, and to Guattarian ethico-aesthetics. In that sense, one should understand degrowth not as the opposite of growth or as a state of poverty that stems from material decrease but, rather, as a negation to attribute money value to nature, human relations, and all human transactions. It asks for the re-conceptualisation of such concepts, for example, the concept of Environmental Services (ES), outside the market logic (Muniz & Cruz, 2015).

By turning ecosystem functions into services and, thus, into commodities, the biotic elements and their intrinsic relations in the ecosystems and their processes are completely ignored, leaving only what interests humans: the services (ibid, p. 10898).

For degrowth, to put the word 'service' next to the word 'environment' means selling and controlling it as a commodity, as if it were a bag of eco-crisps. This has dangerous implications, as it means measuring its profitability for humans, establishing ownership and property rights on indigenous lands, benchmarking the best service providers, creating incentives and antagonism for environmental market investment, and excluding old practices that used to sustain it because they do not talk the business language (Bachram, 2004).

Altogether, the degrowth political movement makes a case for the growth society, especially in the North context, to downscale its production-consumption patterns. This downscaling will proportionally affect the way products are consumed, as it will align with ecological limits and sustainable resource use policies. The overall concept of degrowth, though, does not stem from resource scarcity discourses. On the contrary, it is a re-establishment of the concept of ecological abundance that goes beyond mere discussion over resource consumption to incorporate a plethora of social ecosystems that can address rampant destructive economism.

Here it is pertinent to set down some differences between the growth and degrowth narratives that can help better track their antagonistic points, which in turn could help us explore relevant policies under these narrations.

1. Degrowth's conceptual framework is based on the idea of *synergies* rather than *trade-offs* that stem from economic growth conceptualizations.

2. Nature has *intrinsic value* in degrowth. In growth, nature is capital and thus other valuation languages for her are excluded.

3. In degrowth, the hegemony of *developmentalism* should be abandoned. In economic growth, the continuation of growth is an imperative and it is happening through sustainable development that comes as a solution to our environmental and social problems through technology, efficiency and innovation discourses.

4. Humans in growth are individualistic and profit-seeking utilitarianists (homo oeconomicus). In degrowth humans are sharing the values of conviviality, reciprocity, equity, democracy, gifting and ecology.

5. Bioeconomy, political ecology, care economy and gift in degrowth versus green growth, efficiency, technological innovation in growth strategy.

6. Democracy and participatory processes in degrowth versus market and state control in growth.

7. Rich countries to pay their colonial depts by degrowing their economies /Poor counties to be used as SD deposits so that the West can keep consuming.

8. Subsistence local communities, indigenous knowledge versus universal western knowledge, displacement of indigenous bodies and cultures to establish quantification of social and environmental services, and thus quantification and measurement over relations between humans and between humans and nature.

(Muniz & Cruz, 2015).

5.4. What are Some Ways to Degrow?

I now turn to the question of how to degrow? Firstly, drawing from the above analysis, we need to distinguish between mainstream environmentalism that is represented by green growth and sustainable development politics with a resisting environmentalism that comprises various movements under the banner of ecological and social justice. There is mounting research that highlights the qualitative differences among the two and urges us to problematize and resist mainstream economic determinism (Anguelovski & Martínez Alier, 2014; D'Alisa et al., 2015; Latouche, 2010; Schmelzer, 2015).

Secondly, after we have made some conceptual cleansing, we need to ask how we can implement degrowth in a way that brings about desired social and environmental transformations. Here it is pertinent to look at the role of the state in a degrowth framework. There is a tension in the degrowth movement regarding the role of the state and the politics towards socio-ecological transformations. It seems that the state is regarded as inadequate to generate political changes in its own right, but at the same time it is the space of political appeal, a kind of interlocutor for socio-ecological struggles (D'Alisa & Kallis, 2020; Koch, 2022). Let me detail how the latter see the relationship between degrowth and the state.

Koch (2022) addresses the issue by examining three classical sociologists of the state: Antonio Gramsci, Nicos Poulantzas and Pierre Bourdieu. By utilising their relational ontology and applying it to state-civil society relations, he is suggesting a broader relational strategic approach when it comes to state theory for the degrowth movement. This means that they regard the state as interconnected to the social, economic, and political world, and thus an open field of social struggle and thus for domination and emancipation. The state is no longer a mere reflection of oppressive power, but a process of ongoing negotiations of power relations. Seen this way, the state, a social relation, and an arena of social struggles, could play a vital role, either as an ally or an enemy in the creation of a more socially and environmentally just society (Koch, 2022).

Similarly, D'Alisa & Kallis (2020), adopt a Gramscian "strategic relational approach" for the state, that sees the state as a combination of and interplay between the "political and civil society" with its domain being that of "coercion and consent" (p.5). These authors try to escape, on the one hand, anarchist conceptualisations of the state as the source of all evil, and on the other hand, reformist movements that tend to lean toward top-down prescriptive politics. That is, D' Alisa & Kallis (2020) choose to argue that change, along with coercion and power, occurs in both grassroots and top-down spaces, and thus degrowth can and should be negotiated in both sites of social reproduction. It is pertinent citing them to better understand the Gramscian concept of the *integral state*.

In Gramsci's system, we should point out, there is no outside to the state, and it is not possible to abolish or go beyond the state. We are always within the integral state. If we are to create a society that does not depend on growth, we should start building a counter-hegemony within the integral state by changes in the realms of both civil and political society (that is with an effective and mingled combination of interstitial and symbiotic strategy) (D'Alisa & Kallis, 2020, p. 6).

The above clears the ambiguous degrowth/state relations at least in theory, as it adopts a Gramscian theory of the state that is strategic and relational in the sense that "for Gramsci cultural change is fundamental" and that a mere top-down degrowth policy would not automatically lead to a degrowth

society (ibid, p. 7). The onus here then is a simultaneous change in policies and in mentalities that can lead to, as Gramsci would say, a transformation in the dominant form of common sense, referring here in particular to more economic growth.

Thirdly, taking this argument to the micro-political and following a Foucauldian and Guattarian theory of the subject, a change in mentality, or cultural change, can in turn transform different parts of our everyday lives to align with ecological ways of being with the world. Here 'The eight Rs of degrowth', can inform individual and collective choices towards this ecological living, and they are as follows:

...reevaluate (shift values); reconceptualize (e.g., wealth vs. poverty or scarcity vs. abundance); restructure production beyond capitalism; redistribute between North and South and within countries; relocalize the economy; and reduce, recycle, and reuse resources (Kallis & March 2015, p. 361).

In line with the previous eight Rs and drawing from degrowth research, I below outline some ways to degrow that can also inform educational policy and practice.

5.4.1. Reduce working hours

Reducing working hours and production thus decreasing the market sphere is crucial for a degrowth strategy and a necessary condition for achieving well-being within the North (Kallis & March, 2015). It is considered a major shift from the commonsensual discourse of productivity and careers. It is llargely based on an economic theory that doesn't see employment as a byproduct of growth, as many classical economists see it, but the other way around (Berr, 2015, p. 470). Long working hours and competition in work fare has been said to increase stress levels and is also linked to environmental externalities. That is because the longer someone stays inside the market field, the more they are likely to consume, while other important aspects of human life, like culture, family and relaxation in nature, are regarded as non-productive and not valuable (Bergh, 2007). Post-capitalist feminist scholars and decolonial feminist scholars have also highlighted issues with women's unpaid reproductive work which is necessary for the expansion of the market economy (Cameron & Gibson-Graham, 2003),

and the rights discourse as 'the ability to conform to Eurocentric standards of humanity, gender, and freedom' which of course includes work and which ultimately subjugates the agency of the oppressed (Abazeri, n.d., p. 3).

5.3.2. Place-making and building togetherness strategies

Place-making strategies, urban planting and farming, and community based cultural activities have been proven to have an invaluable impact on local communities, refugees and other marginalized groups who reconstruct their lives around common goals (Lang & Marsden, 2018). These activities are also closely connected with the most recent turn of Environmental Justice movements *towards* indigenous struggles for rights over land and territory, displacement and borders (Genicot & Hernandez-de-Benito, 2022; Jegede, 2017; Zentner et al., 2019). Local people globally strive to protect their homes and demand space to live under current *gentrification* initiatives that take place in megacities. Apart from revitalising and making parts of cities clean and aesthetically attractive again, we need to ask: who benefits from these changes, and are they accompanied by affordable housing policies or for-profit real-estate projects (i.e., Airbnb)? Should the second, that is real estate corporations' interests prevail, then there is going to be further marginalisation of lower-income households. (Anguelovski & Martínez Alier, 2014).

For example, Lang and Marsden (2018), conducting research in three places in Wales, they have shown through a "deep place approach" that smaller, place-based and local economies best serve the aim of social and environmental sustainability than central infrastructural projects, with an emphasis on more grassroots, local government. Their analysis is premised on the critique of current "agglomeration" policies of industrial investment programmes in cities, which, according to New Economic Geography (Krugman1998), will benefit the economy by boosting investment incentives, attracting businesses and innovation without calculating , though, the costs of such growth. More often than ever, the drawbacks of industrial agglomerations exceed the benefits for poor areas (Lang & Marsden, 2018, p. 498).

5.3.3. Food security and slow food culture.

Defending the rights to food security, access to fresh and healthy food in cities that is not necessarily available to all (with the fast-food industry not counted as sustainable) is of major importance for a degrowth strategy. There is the need to defend this right in the most marginal and underfunded areas of cities. To secure healthy food for all, community-based practices, like community farming or traditional cuisines should be reinforced (Anguelovski & Martínez Alier, 2014).

The idea of slow food is relevant here too. It derives from the slow food movement at the Langhe territory in Italy (Petrini, 2003). The group that was organised is a good example of people coming together to preserve Italian culture and gastronomy against the fast-food industry. The group aspired to also preserve the right to pleasure in a slow time and conviviality culture. To that they cite:

The nutritional balance sheet has yet another item in the debit column: the way the food is eaten in a McDonald's establishment. The raw fluorescent lighting, the uncomfortable stools, the shared tables, the cardboard containers all act as inducements to eating quickly, without chatting; it is like a visit to a protein filling station. The ritual of sitting down together to eat, with its attendant sociability and personal service (not to mention gastronomic values) is sacrificed to practices deriving from Taylorism (assembly-line methods) (Petrini, 2003, p. 32).

As simple as giving time to the enjoyment of food and people around you, the slow food movement highlights the destructive effects of acceleration culture on our senses and our material culture. It is deemed pertinent then to close this part by citing a passage from their manifesto that illustrates the need to slow down and cultivate taste: A firm defense of quiet material pleasure is the only way to oppose the universal folly of the Fast Life.

May suitable doses of guaranteed sensual pleasure and slow, longlasting enjoyment preserve us from the contagion of the multitude who mistake frenzy for efficiency.

Our defense should begin at the table with Slow Food. Let us rediscover the flavors and savors of regional cooking and banish the degrading effects of Fast Food.

In the name of productivity, Fast Life has changed our way of being and threatens our environment and our landscapes. So Slow Food is now the only truly progressive answer.

That is what real culture is all about: developing taste rather than demeaning it. And what better way to set about this than an international exchange of experiences, knowledge, and projects?

Slow Food guarantees a better future.

Slow Food is an idea that needs plenty of qualified supporters who can help turn this (slow) motion into an international movement, with a little snail as its symbol.

(Petrini, 2003).



5.4. Post-Capitalist Development: Feminist Scholars

We have seen how a small spontaneous local idea, like that of the Slow Food association in Italy, can turn into a counter socio-environmental response to fast industrial development in the North, expressed through various strands of the degrowth discourse. Following these micropolitical tendencies, I now turn to how these resonate with macropolitical feminist proposals for a "postcapitalist development" (Cameron & Gibson-Graham, 2003; Fraser, 2021; Mies, 2014; Turker & Murphy, 2021; Williams, 2020), and whether and how these may also inform educational policies and practices in turn.

The importance of including a feminist view on the issue of capitalist development has been pertinently explained by Abazeri (2020), when she writes that "the politics of gender, race, and labor are fundamentally tied to the development of a modern capitalist global system and therefore must be central in the understanding and praxis of non-capitalist alternatives" (p. 135). In other words, transforming a capitalist state/state of mind means paying attention to the technologies that make it work. This includes not only the economic machinery but also the formation of power relations amongst its subjects. This part appeals greatly to the application of the degrowth strategy to 'revaluate'. It addresses the issue of re-valuing the economic sphere through feminist post-capitalist, care and subsistence literature on the economy; a theme that may help channel crucial transformations towards an ecological mindset in education. In other words, what a feminist new-materialist viewpoint might bring to the table is the acknowledgement of the interconnectedness between material and immaterial or between economy and culture/non-monetized societal relations.

What might a post-capitalist development look like following a feminist understanding of the economy? Before starting to explore this question by drawing from the relevant literature, it is pertinent to mention a few key words that keep repeating in this type of development although by no means exhaust the topic. These are subsistence, care economies, ethical science, and conviviality/reciprocity. Let us see how these themes play out in the feminist take on the economy following the work of Gibson-Graham and eco-feminist scholars (Cameron & Gibson-Graham, 2003; Mies, 1985; Salleh, n.d.; Turker & Murphy, 2021; Williams, 2020). These authors critically contest the modern capitalist development project by emphasizing the fallacy of the growth economy in its

economic, scientific, and moral structure. The following section draws on the voices of women in socioeconomic discourse as examples. Each title discusses an emergence from the feminist postcapitalist literature that might open revaluation processes in society's relationship to nature and ecology.

5.4.1. Gibson-Graham: on the economic sphere, the non-official economy, and the 'opened up' economy

Here I draw largely from the work of Katherine Gibson and Julie Graham who, in the 1990s, formed the Community Economy Collectives (CEC); a group of scholars researching alternative models of economies to that of capitalism⁶ Cameron & Gibson-Graham (2003), in their work "feminising the economy" re-narrate economic discourses that make visible non-capitalist alternatives. At large, feminist scholars in recent decades have helped women to see through economic injustices that occur under the modern phallocratic state. In this regard women were/are either excluded from what is called the official market economy, or their contributions to the economy were/are either unnoticed or devalued as non-economic or just 'taken for granted' practices of benevolence. In this respect, the authors discuss "what is considered economic and non-economic" spheres and give out a feminist account of the different metaphors given to essential economic activities (p. 146).

In summary, these metaphors intend to expand the concept of the "Official Economy", and are described as: "Production and Reproduction, Hand and Heart, Exchange and Gift, Icing and Layer Cake" (Cameron & Gibson-Graham, 2003, pp. 147–148). What these metaphors have in common is an extended vision of an economy that is inclusive of women's non-monetised care giving activities, and nature's contribution to the economy. These are activities including but not restricted to affective and emotional nurturing and gift giving which "resist measurement and calculations of commensurability..." while they "prolong sustenance" (ibid, p. 148).

We can explicate this dichotomous reality by displaying Hazel Henderson's metaphor of the economy as a layered cake with icing (Figure 5.1). Cameron and Gibson-Graham (2003) use this image to explain a dichotomous view of the economy. That is GNP (Gross National Product), or the visible economy, can be added to the lower layers of the economy, namely the "social cooperative" and Nature, which are rendered invisible by the "official" (Cameron & Gibson-Graham, 2003, p. 148). Seen from another perspective, Henderson's image shows the proximity of each different economic plane to Nature (matter), with the care, community, family and unpaid labor planes closer to each other. It is also worth noticing that the monetary economy and state economic functions, including formal schooling services, are represented as quite distant from the physical world.

It could be argued that through Henderson's cake we can discern a traditional Western dichotomous reality: that of culture versus Nature, whilst a certain "formal" economic culture is represented hierarchically, as on the top of the divide. This distinction demonstrates how the official economy creates both exclusions and forms of distance between interdependent subjects. According to Cameron and Gibson-Graham (2003), it is not representative of the much more complex relations of the economic spheres in intra-action with each other. Therefore, we could say that the 'official economy' is much more chaotic, complex and networked, than a neat and tidy representation of it either coming from neo-liberal or anti-capitalist worldviews.



Figure 5.1 Hazel Henderson's layer cake with icing (Cameron & Gibson-Graham, 2003). Access the Image at <u>https://images.app.goo.gl/J7ftG5h2unoeSY5w8</u>

Taking the previous divisions of the economic spheres into consideration, Cameron and Gibson-Graham (2003) question these divisions on the basis that "one side of the binary is privileged as the source of emancipation while the other side is renounced" (p. 150). In fact, oppressions may arise in both sides or sometimes emancipation can spring up in places where it is least expected. They use Henderson's and Brandt's relevant research on how "…characteristics more readily associated with the non-monetised part of the economy, 'mother nature' and 'social cooperation'… provide insights into the variety of ways goods and services might be produced in the market sector outside of mainstream capitalist firms…" (Cameron & Gibson-Graham, 2003, p. 151).

Fairtrade practice is a good example of how a care policy can be extended to the macrolevel, alleviating some of the injustices in wage labor in Southern agricultural areas (Meemken et al., 2019). In a nutshell, Cameron and Gibson-Graham counter-propose to the feminist extended versions of the economy and the divisions they reproduce between feminine/masculine economic models an open-ended, non-essentialised version of economic discourse (p. 151). In their understanding, the economy,

... is emptied of any essential identity, logic, organising principle or determinant. In place of the view that the economy is a whole comprised of a pre-established number of parts or sectors, we see the economy as an open-ended discursive construct made up of multiple constituents (Cameron & Gibson-Graham, 2003, p. 152).

The above helps us think of the economy as a network that is always in motion, changing according to societal and natural events rather than a fixed system made up of pre-determined components. A good example here, and relevant to this topic, is Cameron and Gibson-Graham's research on the nuances that childcare can take in a feminised economy where most women are employed. They utilize research from Australia on a community cooperative child-care movement to showcase a variety of economic activities related to child-care that can be characterized as nurturing, community enlarging, creative and co-operative. These include from child-care centres that run on a capitalist logic to proenvironmental Steiner kindergarten, babysitting club, community childcare, volunteer childcare and parents sharing childcare, just to mention a few. This is a good example of the multiple ways that childcare, and to an extent education, could be managed under a feminised economy. Nonetheless, for Cameron and Gibson-Graham (2003), it is vital to be reminded of the fact that "within this diverse economy on both sides of the market/ non-market, paid/unpaid, capitalist/non-capitalist divides there are opportunities for economically exploitative and emotionally oppressive conditions as well as fair and emotionally creative ones. It seems to us that a feminist economic politics would champion the latter..." (p. 153).

In all economic activities across the board we could promote the valuing and strengthening of traditionally coded 'feminine' qualities such as nurture, cooperation, sharing, giving, concern for the other, attentiveness to nature, and so on, as well as traditionally coded 'masculine' qualities such as independence, experimentation, leadership and adventurousness (Cameron & Gibson-Graham, 2003, p. 153).

Taking the above into consideration, and the previous discussion on the concept of the formation of subjectivity not as an extension of a pre-given self but as processes of singularisation and sharing, we can highlight the interdependent nature of both the social and natural ecosystems. It is pertinent to

say that an education that intervenes in this direction can be transformative, but it is not a case of a closed system or structure towards a pre-given identity or a fixed knowledge/system. This is also to say that feminine/masculine characteristics, as described above, are starting to blur or are becoming non-essentialised in the sense that our bodies have to perform certain activities toward a fixed gendered subjectivity. It would be uncritical to reproduce the same gendered roles of the capitalist system or have the same expectations as society from women's and men's bodies as the ones in the organised capitalist system.

To this end, many feminist scholars, amongst them Nancy Fraser (2021), call for an "anti-capitalist" political framework. In her recent work "Climates of Capital" she also discusses the idea of the ecological turn in social theory and bases her analysis on capitalism's ecological contradiction. She argues for the need to generate a new commonsense that should be essentially 'anti-capitalist'. In more detail, she writes:

Addressing the full extent of our general crisis, it must connect its ecological diagnosis to other vital concerns—including livelihood insecurity and denial of labour rights; public disinvestment from social reproduction and chronic undervaluation of carework; ethnoracial imperial oppression and gender and sex domination; dispossession, expulsion and exclusion of migrants; militarization, political authoritarianism and police brutality. These concerns are intertwined with and exacerbated by climate change... (Fraser, 2021, p. 96).

5.4.2. Going beyond 'capilocentrism'- economic assemblages

The main discourse behind the Gibson-Graham and Fraser frameworks of the economy/society relationship, derives from challenging "capilocentrism- the widespread assumption that capitalism is the only way to understand the economy..." (Turker & Murphy, 2021, p. 50). This, in turn, stems from the observation that there are multiple and different production relations in the world that cannot all

be assigned capitalist characteristics. These include for example "capitalist, alternative capitalist, and non-capitalist processes" (Turker & Murphy, 2021, p. 52).

To better understand these economic relations the latter draws from Guattarian and Deleuzian theory of "assemblage". Guattari and Deleuze give a similar account to the description of social functions to that discussed in Chapter One, on the Foucauldian anti-essentialist discourse theory. By explicating the various bits and bytes of social organisations as "assemblages", they based their emergences on contingent events, as we have also seen in Foucauldian discourse, rather than "unchanging essences" (ibid, p. 53). Again, transformation and movement is fundamental in understanding their take on sociality and constituent subjectivity, as "the Deleuzian approach maintains "being" in the world to be based on movement and emergence" (Turker & Murphy, 2021, p. 53).

To better understand this movement/emergence interplay in a relational approach to the economy, Turker and Murphy (2021) use, as an example, a case study of a Kurdish women's cooperative in agricultural production. They shed light on the conditions that might facilitate the (de)stabilization of such collective economies. This case was of interest for its endurance despite the turmoil generated in 2016 due to the Turkish state's declaration of a State of Emergency that had, as a consequence, the movement's dislocation and the shop's eventual shutting down. Despite this grim contingency, the cooperative continued its business through collaboration with other retail stores around the city and through Instagram marketing (Turker & Murphy, 2021, p. 64). Transformation, emergence, and relational ontologies are all present in this example which, in a sense, describes these unfixed assemblages that are indeed an ongoing work in progress. It is also a good example of interdependence and co-existence of socioeconomic contingencies.





"Diverse Economies Iceberg by <u>Community Economies Collective</u> is licensed under a <u>Creative Commons Attribution-</u> <u>ShareAlike 4.0 International License</u>."

Staying with the concept of economic assemblages, these may best be described in Gibson-Graham's work on alternative economies. Notwithstanding the previous critique on viewing the economy through sectors, divisions and strict hierarchies, in the image of the iceberg (Figure 5.2) Gibson-Graham remind us what often goes unnoticed and undervalued; the invisible part of the iceberg that takes up so much space and it is indispensable to the other half.

5.4.3. A feminist ethics of care

It is pertinent to explore how theoretical frameworks can work out in real world, as a theory could be a mere articulation of a thought-idea and, as such, does not necessarily represent reality per se, or even something meaningful. For example, one may question the capacity for a feminist ethics of care to be applicable, or wonder how you apply any ethics of care in an individualistic economy-centered world? In this regard, Williams (2020) applies the feminist ethics of care in urban studies when she explores care as a performative act that took place in the Women's Library, Newton, in Sydney, Australia. In her view feminist ethics of care is a grounded praxis that can be manifest in moments of care for everyday life to be "maintained, continued, repaired" (Williams, 2020, p. 1).

The emergence of the care discourse can be associated with the lack of care provisioning that takes place under neo-liberal structural adjustment policies. This is often reflected in various instances of collective mental and physical health deterioration in cities. In neoliberal terms, care is unproblematically positioned as something personal, or as something that can be dealt with in the marketplace or at home by the family (although in many cases the family and market structures can be the places of abuse) (ibid, p. 1). In contrast, as Williams writes, a feminist ethics of care "is a grounded ethics" and has four principles: "attentiveness, responsibility, competence and responsiveness" (ibid, p. 2). A feminist ethics of care is also based on a relational ontology, which means that it sees the world as interdependent, interconnected and in intra-action (following ideas like that of Barad), highlighting the connectivity of our existence to other humans and non-human beings. This logic, in turn, can be utilized to counteract the neoliberal market logic of competition and individualism where these practices cause despair and alienation.

Thus, a feminist ethics of care resonates with an ecological and degrowth framework that aspires to transform structures and institutions under an ecological mindset. The same goes for a climate change strategy in education, where it has become imperative to transfer caring practices, for the self, for Nature and other entities. In institutions like healthcare and education a feminist ethics of care strategy could be beneficial for the advancement of an ecological viewpoint, if not imperative at this predicament.

5.5. Patriarchal Masculinity and Environmentally Catastrophic Behaviours

To exclude males from the feminist ethics of care and environmental studies would be a major omission. A feminist post-capitalist framework can help us go further from the feminine to understand not only women's various positions in transforming the economy but also patriarchal male's economic positions and attitudes towards nature. The idea of hegemonic masculinity plays an important role in constructing 'maleness' and male subjectivities in a post-capitalist economy and their contribution and capacities are often limited to the reproduction of the capitalist economy in feminist social theory but also as the subjects of the classical economic theory. There is, though, new research that suggests that there needs to be an equal focus on the subjectivity of men in conjunction with post-capitalist alternatives (Khanna, 2021; Paulson & Boose, 2019) and the deconstruction of environmentally destructive masculine activities like "logging, mining, petroleum exploitation, ranching and agroindustry" (Paulson & Boose, 2019, p.1). At this point, it is pertinent to clarify that the analysis of the reproduction of the capitalist state is not based on essentialist binaries between male/female subjects, but rather on the patriarchal power relations that are performed by men and women alike, and that reproduce it.

Paulson avoids assigning under the biological category 'male' the same characteristics or using 'man' as a homogenous group with identical attitudes towards the environment. Instead by adopting an intersectionality approach, she points to the interplay of different factors that can influence male behaviour towards nature. Discursively, this is usually associated with Connell's notion of "hegemonic masculinity" where "behaviours coded as feminine may constrain environmental initiatives in contexts

where certain attitudes and acts of care for nature are associated with femininity" (ibid, p. 2). We have seen how important care is in developing alternative economies and sociabilities within an ecological mentality and it is exactly care that is considered feminine and thus excluded from a man's subjectification process. On this issue, Paulson and Boose (2019) pertinently cite:

...boys are pressurized into a brutal self-censorship process that forbids the development of sensitivity, the expression of feelings and emotions and the very human act of looking after and caring for others and ultimately for themselves (p.2).

Materially the gendered characteristics of climate change are reflected in statistical analyses of the consumption patterns and ecological footprints of males and females in the North that reveals a lifestyle is much more catastrophic for the environment than women's (Paulson & Boose, 2019, p. 3). The depiction of desirable hegemonic masculinity as meat eaters, driving energy intensive cars, travelling regularly and owning big energy intensive houses is detrimental to a desirable green transition discourse and would not work for a degrowth narrative. Thus, feminist scholarship in collaboration with ecological and degrowth approaches to the economy elucidates the imperative of men's behavioural and subjectivity transformations and perhaps could help channel some of these changes. Similarly, an ecological transformative education should aspire to entail pedagogies that endorse care for the self and for the surroundings in a context of co-existence, reciprocity, and interconnectedness. In this the feminist post-capitalist framework is an industrious discourse as has been shown in education as it can enunciate the politics of care in different contexts and to bring about care, justice and renewed gender subjectivities that are in contact with their bodies and nature. This means, "raising boys (together with girls and others) to embrace a healthier range of bodily and environmental practices and purposes is a crucial nexus for change" (Paulson & Boose, 2019, p. 5).

5.6. Ecofeminism, A-Moral Science and the Human Non-Human Argument

In opposition to the masculinist economy/science discourse, ecofeminism is a strand of feminism rooted in ecology; it draws from the traditional women's activities that promote sustenance without wrecking nature (Mies, 1985, 1990; Salleh, n.d.). Salleh (2017) discerns it from other types of feminisms, like liberal and socialist feminisms, since the latter "focus rather uncritically on the pursuit of equality", while the former as Salleh cites is "…not looking for an equal slice of a toxic pie" (p. 48). In that sense, ecofeminism is a discourse that problematizes Western masculinist values from an ecological perspective and is attentive to "women's experiences of everyday care-giving labour" (Salleh, 2017, p. 48).

Ecofeminists make a case for their difference from liberal/socialist feminists as they attempt to deconstruct the logic of productivism to that of a regenerative or reproductive economy. This framework sits well with previous degrowth critiques and is best understood as a revaluation of the relations of human society to nature. This reevaluation touches subtle details on everyday issues, like labour, that are considered black-boxed by traditional economic theories. Along with previous feminist economic scholars, the point that the ecofeminists bring to the fore is "the fact that societynature relations are historically sex-gendered..." (Salleh, 2017, p. 50). This is premised on narrations of women as being closer to nature, while men are closer to intellectual work, and is based on an economic theory, including Marxist labour theory that keeps reproductive and metabolic energy exchange material processes under the radar in the GDP official economy. In a nutshell, "the labour theory of value downplays that reproductive dimension, just as it under-theorises the theft of value from nature-at-large", and this is why ecofeminists "demand a thorough-going embodied materialism" (Salleh, 2017, p. 50). This means that, instead of regarding nature/human body as a resource, this theory calls for the revaluation of nature/society relations as one that is characterized by reciprocity and energy exchange. Along similar lines, labour should not merely concern the monetary and surplus value of someone's work, but also the body/energy exchange and bodily exhaustion for example. At large, "...ecofeminists reject the linear logic of consumerism and energy wasting free trade, favouring a cyclic economy, locally engaged in permanent regeneration of the humanity–nature metabolism" (Salleh, 2017, p. 55).

It is important to note they do not ask for the monetisation of women's reproductive care-giving activities, or for environmental services as it is considered detrimental to an ecological transformation. On the contrary, their main arguments are that "the interlinked notions of embodied debt, metaindustrial labour and regenerative eco-sufficiency, will be strategic categories in transitioning away from modernist patriarchal illusions of control" (ibid, p.55). With embodied debt is the energetic value that is extracted from human bodies, while meta-industrial labour largely refers to performing work outside the accumulation market logic but within planetary cyclical frames, as well as regenerative eco-sufficiency the idea of sustaining life in line with ecological limits.

Abazeri (2022) also highlights the importance of fostering a decolonial perspective in an ecofeminist approach. According to the latter, a decolonial feminism approach stretches the need to examine carefully how a unified concept of subjectivity through, for example, a human rights approach, can be detrimental to what we have called processes of singularization of subjectivities, or the freedom to form/alter one's own subjectivity. Especially human rights frameworks can sometimes enforce a specific identity on women that it is not aligned with their lived experiences, or seen through social, mental, and environmental levels/ecologies.

In a similar vein, the liberal discourse of educating girls and women can also obscure an uncritical understanding of women's education. A good example of how this economic discourse is materialized by women's bodies is through the narration of women's education and right to work toward the future prosperity of the family and of society. In a sense, women and young girls in liberal modern states are seen this way as an extension of men's prosperity, and of the capitalist state/market complex, as their

own worth is valued within this relationship that ultimately could lead to oppressions of their unique subjectivity.

Next to the modern economic discourse, eco-feminists have criticized modern scientific discourse as "a-moral" and dangerous for women and nature (Mies, 1990a). The modern scientist and their natural science are considered as altogether a-moral, because they derive from the old history of violence against women and nature, separation and fragmentation of natural elements (atoms) and cycles (reproduction), a false a-political rationality that becomes universal knowledge and the creation of a binary view of reality (subject/object). Mies (1990) states:

This science is irresponsible, amoral, immoral, and second, that we no longer want to go along with this game of a double moral standard-one set for the laboratory, another for private or political life. What the scientist would not do to himself, he should not do to any other being either (p. 439).

Mies argues that by ascribing to science the values of objectivity and ultimate truth, power is made latent and silenced. Thus, for Mies, power is the political substance that has been removed from scientific discourses so that it can be exercised in liberation from political constraints. In this way, any discussion about violent and catastrophic scientific research becomes unthinkable as it denies the world (which here is the White Man) from his path to absolute and ultimate knowledge. Again Mies (1990) argues that this separation of power (politics) from science (knowledge) is a mere concealment of ever greater omnipotence. She explicates that position in the following way:

The violence of the scientist is mainly the power of definition. It has been transformed from direct violence to structural violence, which appears as clean and pure. We should remember that it is precisely this power of definition of what is human and what is nonhuman that broke down the moral barriers for those scientists who did their research on people in Nazi concentration camps, particularly on mentally handicapped people. The scientists who did their fundamental research on such people accepted that they were nonhuman or subhuman (Mies, 1990a, p. 438).

Here Mies is touching on the issues of seeing through a binary view; one that separates human from non-human, and how this mechanism can be catastrophic for both people and nature alike. In an ecological education motif, these divisions should be reevaluated and discussed in both the curriculum and in pedagogy.

All in all, I have tried to show the interconnectivity of the economic and scientific discourse to that of immaterial cultures and the natural world. I have also argued through the work of influential feminist scholars that the idea of the invisibility and indivisibility of care activities that are responsible for our sustenance has a vital role to play in the management of more sustainable and ecologically moral institutions, including education. This interconnected view of the world has been also expressed in the artistic business by Greg Sholette, who uses the metaphor of the "dark matter" "to denote the shadowy realm of artistic labour that sustains the social gravity of the artistic universe, just like physical dark matter prevents the cosmos from collapsing" (Böhm & Szreder, 2020, p 10). This dark matter exists in caregiving, in education and the arts, in the often shadowy, painful and tiring activities of costly, unremunerated caregiving. I would like to close this part by dedicating a passage to this dark matter that matters all the way:

'In one or three decades, the towers of capitalist growth will crumble, just like their pyramidal predecessors did, their dust mixing with the yellow sands of the always expanding desert. Artistic icebergs melt as fast as their natural namesakes. While the conventions of art shift, artistic energies diffuse in the creative struggles of life today. The best of former-art becomes not an object to be owned but an artistic competence to be activated, a weird tool that people make use of in various walks of life,an an-artistic practice'

(Böhm & Szreder, 2020, p. 20)

5.7. Conclusions

In this Chapter, and generally in this Section, I have tried to capture some of the discourses around sustainability, development and education, by looking at different agents and viewpoints on sustainability. By doing that, I have looked to shed light to the first research question: "How is education instituted in late modernity and in the socio-political discourse between economic growth and sustainable development?". Subsequently, after I have explored the discourses of major economic policy institutions that are also implicated with education policy globally, in this Chapter, I have turned to some critical to mainstream economic growth discourses. It could be argued that the two clusters of discourses represent different ways to think of sustainability. For the more critical cluster, we learn that certain traditional knowledge that stems from biological and other scientific discourses may hamper ecological perspectives, or that previous exclusions of women and nature from the official economy have sustained an unequal economic growth narrative. Then degrowth and ethico-aesthetics ask for a reset of societal functions that are dominated by economic growth language to include social care and environmental protection language. The arts, for example, have been promoted by ecological discourse as a medium to generate care ethics. As I move to the next Section, the empirical part of the thesis, these theoretical concepts are fundamental in understanding and analysing the data.

SECTION 3

INSTANCES OF ECOLOGICAL EDUCATION IN CURRICULUM AND EDUCATIONAL INSTITUTIONS

CHAPTER SIX

SUSTAINABILITY IN ENGLAND'S AND GREECE'S CURRICULUM TEXTS

6.0. Introduction

In this chapter, I examine the national curriculum framework of primary education in England and Greece respectively. More specifically, for England, the document I have discursively analysed is the National Curriculum in England Key Stages 1 and 2 framework document (September 2013), commissioned by the Department for Education. What I have looked for across the curriculum is any reference to, or inclusion of, sustainability or climate change education discourse or any other ecopedagogical content that could inform the research questions.

Examining the national curricula, I take a first step to approach the question through policy frameworks that the curriculum utilises, considering that education is a medium of appropriating different disciplinary discourses in modernity. Thus, the examination of the curriculum could provide insights into the appropriation of sustainability discourse in primary education if any, and perhaps reveal the overarching policy orientation in primary education towards sustainability and climate education.

Utilising (as has been already discussed in Chapter One) a Foucauldian discourse analysis approach of the Primary Education curriculum in England, I am looking in the text for (dis)continuities, ruptures and/or repetitions and synergies that construct the growth/modern framework versus or a more sustainability framework. These would enable us to observe any constraints/enablers of sustainable frameworks in education, climate education and climate related topics.

6.1. England Primary National Curriculum

At first impression when looking at the contents of the English National curriculum (2013) for Key Stages 1 and 2 is that it is first and foremost based upon the development of basic literacy and numeracy attainments. This is made explicit if someone observes the length that these subjects occupy at the curriculum, which is the ³/₄ of the whole curriculum. The third subject explored at some length is Science, while the rest of the subjects, including art and design, music, history, geography, computing and physical education, occupy a very small space in the curriculum. It could be argued that the focus of the curriculum at Key Stage 1 and 2 is based on the development of basic linguistic and mathematical reasoning. This comes as no surprise as language and mathematics are the traditional/classical disciplines that Western societies are built upon. These disciplines construct the modern foundation; that of rationality.

Thus, the development of the core curriculum framework is premised upon content and pedagogy for learning language/math and there is no explicit reference to sustainability at the contents of the curriculum. These disciplines are premised in highly closed and scholastic language rules that hardly ever change and any reference to sustainability would probably be based upon individual school choice. One would then move to the next most important subject in the curriculum, Science, to find sustainability and climate change related language/subjects in the national curriculum. At first glance, there is no direct reference on science to climate change or sustainability. Also, these topics are not taught through, for example, the secondary subjects of arts, computing science, and so on. The question that arises here is if that is an omission justified perhaps due to the infusion of climate change/sustainability education in all school subjects (as suggested by international targets for ESD), or if it is just not there yet.

Let us go through this question by analysing discursively some of the core disciplines of the curriculum to examine possible connections with the sustainability mandate. Reading through the curriculum guide, we see that it focuses on the cognitive attainment of the language by following specific rules of language learning, like recognising graphemes, spelling, grammar, and word sequencing. The guidelines are detailed and structured in a way that can be assessed by the teacher, who oversees transmitting and organising knowledge in a way that children can access these (mostly) cognitive/behavioural schemata and then produce assessments. The following instructions are some examples taken from the study programme that indicate the cognitive, stipulating and instrumental types of learning in the language subject:

"sit correctly at a table, holding a pencil comfortably and correctly" (p. 24).

"using conjunctions, adverbs and prepositions to express time and cause" (p.40).

"provide reasoned justifications for their views." (p. 44).

"write legibly, fluently and with increasing speed" (p. 46).

"assessing the effectiveness of their own and others' writing" (p. 47)

What we can observe from the above is that, first, language and writing is considered a technical skill to be attained and assessed through the transmission of the particularities of the structure of language. Second, as students grow so do the demands for language acquisition, use, and precision mechanisms. The curriculum is thus based on a developmental psychological and rational instrumental viewpoint, where skills develop according to structured pre-conceived knowledge and a physiological mental development increase with the years of study.

This is not to argue against the importance of the development of language and numeric perception by students in education. However, drawing from a critical reading of the instructions through the prism of postcolonial, poststructuralist/posthuman and sustainability discourses of education, the strict adherence to measurable targets in education can be detrimental for the growth of critical thinking, imagination, and affective sides of knowledge of students, which is considered quintessential for the development of sustainability values and healthier/caring mentalities towards the self and others. Thus, measurable and a-contextual discourse in curriculum texts can be considered a constraint on an ecology of knowledge that seeks to promote an interdisciplinary, affective and aesthetic understanding of climate change issues and sustainability responses in general.

As many Freirean educators would argue (Gadotti, 2010b; Misiaszek, 2020), it is different to educate for reading and writing words to educating for reading critically the word around you and taking informed action to transform it. There is a different sense of education here, where meaning precedes language structure. In formal education is a usual occurrence that the learning of the structure of language precedes meaning, as students are expected to acquire a pre-given and non-contextual language structure. This poses issues of valuing children's knowledge of the world and their ability to express such knowledge in education. The hierarchy by which knowledge is constructed in the curriculum and its strict assessment aspects hamper and thus restrain such an expression by children, while language knowledge is a closed system of rules and instructions to be followed and get tested. In this framework, sustainability's potential to educate for a more ecologically ethical world is further obstructed, as a closed linguistically curriculum collides with sustainability's open-ended framework. Surely, though, sustainability education could have some space in language education if appropriated for the school context.

Here Misiaszek's (2021) work on *ecolinguistics* could be significant. The latter considers language to be a powerful tool in teaching through an ecological framework. As he writes, "problematizing how language distances us from one another and all of Nature is essential to critically determine what is
necessary for world-Earth de-distancing..." (Misiaszek, 2021, p. 4). He goes on to say that "...such language awareness is not only to understand one's own oppressions but also 'my' and 'our' actions inflicted upon 'others' and Earth – planetary language awareness" (ibid). Misiaszek's ecolinguistics are a useful pedagogical tool which shows how to deconstruct the dominant language of development around framings of size, resource, time, seeing consciousness as a human only quality and notions of agency. For example, a term that UNECSO utilises in its education frameworks is global citizenship education. Misiaszek proposes instead the term 'citizenships' in the plural to refer to the variety and diversity of possibilities to what and who can be recognised as a citizen through teaching ecopedagogically. This tool could be introduced in many different subjects across the curriculum to add up or transform the way traditional subjects, such as language, science and history, are framed and taught in a monological modern way.

There are in the curriculum general guidelines for a liberal and freedom-oriented education in schools. The following quotation refers to the fact that:

All schools should make provision for personal, social, health and economic education (PSHE), drawing on good practice. Schools are also free to include other subjects or topics of their choice in planning and designing their own programme of education (p. 5).

It could be said here that this could be the space in the curriculum where sustainability could perhaps be 'squeezed' into. However, this space is considered very small (for such a big topic as climate change) and less important compared to other intensive subjects. Further, as MacDonald (2015), has pointed out, it is best for sustainability to be incorporated holistically in the curriculum, thus turning it into a "Living Curriculum" (p. 332). Thus, the space in the curriculum for ecological learning and sustainability as a subject by itself or incorporated within specific subject further shrinks. In looking for a reference to sustainability or ecology I turn to the programme guide for science and geography, as two subjects that are accustomed to accommodating some form of environmental education.

6.2.1. Science

Science's purpose according to the Primary curriculum from England states:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyze causes (p. 144)

Here science is presented as a source of accurate and true knowledge about phenomena, a predictive mechanism, and a function that produces cause-effect relationships to produce what is known as rational thinking. Although there is nothing wrong with thinking scientifically, this thinking as has been discussed in earlier chapters, and following the rules of discourse, creates exclusions of other forms of knowledge by being presented as the only legitimate knowledge. It also reactivates its rules by creating internal repetitions that are, to a great extent, a language shared across biology, chemistry and physics. The construction of the scientific language is considered key in the process of "working scientifically" as mentioned by the primary English curriculum for science in Key Stages 1, 2:

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data (National curriculum, 2013, p. 144).

The language used in the science curriculum discursively re-activates a rational discourse, based on mostly mathematical linguistics and the learning and application of technical terms. There is no association here of the subject of science to that of ecology or sustainability, as someone would expect due to science's connection to natural phenomena. Science is made distant from nature, and nature is

made a resource for knowledge production, or a thing to be studied in isolation. There is no interaction or intra-action, as Barad would say, between the two subjects in the curriculum, which perhaps reinforces a monologic of the scientific discourse throughout the curriculum.

The theme of the natural environment is mentioned at the science curriculum framework in the Year two programme of study under the sub-theme of "Living things and habitats". There, "...pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) ... study a variety of plants and animals within their habitat and observe how living things depend on each other" (p. 151). Although there is a hint about the interdependent relationship between organisms and their environment, as sustainability science teaches us, there is no reference to notions like ecosystems balance, sustainability and/or ecology in this framing of habitats. Rather, in the curriculum, the concepts of 'sorting' and 'classifying' things is very often used to indicate a way to approach the topic of natural habitats and the organisms that live within it. Sorting and classifying are discourses in the modern curriculum that produce a distance between particular subjects and often used to re-produce hierarchies between diverse organisms, phenomena and/or human characteristics. It could be argued here that this discursive practice can act as a constraint in the development of a more inclusive and sustainable science curriculum. They also reinforce a hierarchical view of nature where human beings sit at the top.

Going through the Science guide there are throughout the Years from Key Stages 1 and 2 (corresponding to 5-7 and 7-11 age groups), references to the topics of "Plants", "Animals including humans", "Living things and their habitat", "Materials", "Forces", "Electricity" "Earth and Space" and so on. The word 'environment' also makes its appearance: "Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their

habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted." (p. 148).

The use of the local environment and outdoors learning are important aspects of environmental/sustainability education in science pedagogy (Tupas, 2019), but also facilitators of social justice in learning (Quinn, 2013). As research has shown, nature learning benefits contextual science education, but also engages teachers in knowledge production and protection of the environment (Murphy et al., 2021; Tupas, 2019). Direct contact with nature and outdoor learning is inextricable from an ecological point of view, and the most effective way to acquire meaningful knowledge of the environment (Tupas, 2019, Quinn, 2013). However, as Elliott & Young (2016) notably have pointed out, one should be careful in appropriating nature through a "romanticising" process of the latter that can stall critical sustainability objectives. To be more explicit they note how nature learning and play in nature is more common in early childhood education, as nature is considered from Rousseau's viewpoint linked to childhood through a premature, "women", "native peoples", and "lacking rationality" preconception (p.58). Their argument is concrete when we look at current experience in schools, where outdoors learning and nature learning mostly takes place in early childhood pedagogy. Indeed, also in England's national curriculum the use of the environment to "answer questions" implies a mere superficial and cognitive relationship with nature with no reference to local context, environmental protection, and perhaps caring for nature or bodily experience of/in nature (Freiler, 2008).

To add to the previous discussion, someone would expect the expression sustainability to be present and/or some reference to our planet's current precarious position due to the greenhouse effect. Throughout the section of science, there are elements that can be clearly connected to sustainability. For example, the topic of electricity is one of the major domains where a minimum of sustainable consumption could be applied to the educational curriculum. Instead, the curriculum focuses on understanding the use of electric power and its harnessing by humans through the language of circuits, electric bulbs, wires, and appliances. The use of such language represents electricity as an uncomplicated, human-harnessed force that generates power. There is no reference, though, to the complicated production of electricity and the fossil-fuel related overconsumption that has as an effect in producing multiple environmental and social crises.

Another topic that is presented from a very rational viewpoint, and distant from reality set of insights, is that of planet Earth, which is only introduced as a sub subject of space, seen from afar, thus, creating further distance from our earthy concerns. Notwithstanding the importance of space studies, transdisciplinary sustainability studies have shown that Earth is a living organism, and our only home which currently suffers from the outcomes of human interventions. It is thus pivotal to include in the curriculum Earth not as just a terrestrial object for human observation and scientific analysis, but as our home that needs protection, caring and affection to be sustained.

Throughout the Science curriculum there is plenty of space to incorporate an ecological twist, and let me paraphrase here, of 'working ecologically/scientifically', as for example through the "use the local environment throughout the year to observe how different plants grow" (p. 152). However, there is no direct link between scientific enquiry and the local/global environmental interactions. Instead, as it is observed, doing science is described as "setting up comparative tests", "making observations", "taking measurements", "using standard units", "gathering, recording, classifying and presenting data", "recording data using simple scientific language drawings, labelled diagrams, keys, bar charts and tables" (p. 155). The same patterns of 'working scientifically' continues throughout the lower and upper primary keys stages, with no major differences, apart from intensity. The content and learning outcomes, however, remain the same and even in upper stages when the pupils are introduced in

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notions as is "C temperature" in Year 3 or later in Year 6 in the subject of health "the relationship between diet, exercise, drugs, lifestyle and health" (p. 173), there is no incorporation of the subject environment and its connection to Earth's temperatures rising or health hazards.

The same pattern continues in Year 6 in biological science which, under the headline Evolution and Inheritance, pupils are taught about how species adapt to environmental changes and "comparing how some living things are adapted to survive in extreme conditions" (p. 174). Again, there is no reference to the ecological changes that are occurring that are detrimental for species survival because of climate change, while evolution and adaptation are taught as individual mechanisms of survival, and no reference to ecosystems balance or synthetic environments as has been discussed in new biological research at the previous section. At the same year, students are expected in the subject of electricity to "construct simple series circuits" (p. 175), however knowledge about how electricity is produced, consumed and its relationship to environmental problems is obscured. The science curriculum arguably favors a scientific discourse that is based on knowledge transfer from textbooks and simple observations/experiments in the classroom, while as it been has observed the environmental/ecological context is excluded or implied, but surely not made a priority in 'working scientifically'. Thus, the curriculum - it could be argued - takes a traditional stance towards the discursive appropriation of sciences in education, while new scientific/up-to-date climate, sustainability and /or ecological sciences are greatly excluded from the curriculum.

For a sustainability perspective in education to occur, there would need to be a fundamental transformation of the science curriculum. As has been highlighted by aforementioned place-based, degrowth and eco-economy viewpoints, participatory and democratic ways of making a change toward sustainability, an emphasis on "wholesale redefinition of place", agency and power, are necessary for sustainability management (Marsden & Farioli, 2015a, p. 339). The same principle applies to scientific

knowledge where, in order to apply alternatives to current socioeconomic modernisation, a critical post-normal sustainability science instead of the Cartesian, Western scientific discourse that assumes scientific knowledge is the only universal path to progress is deemed beneficial, along with challenging dominant financial and commodity-based consumption and production. In that, Marsden and Farioli (2015) combine a post normal scientific framework (PNS)⁴ and sustainable place-making theories (SPM) to reinvigorate a vision of sustainability outside economic growth.

The SPM approach calls for new resource governance models and the building of an alternative eco-economic paradigm to address the current contested policy/technology/production/consumption arena. At the same time, PNS calls for different forms of hybridizations to abandon modern divides and pitfalls and engage in new kinds of collective diagnosis and responsible action (Marsden & Farioli, 2015a, p. 342)

In correlation to the above view of science and drawing also from ecofeminist literature (Mies, 1985,

1990), and feminist post-human theories (D. Haraway, 1988; D. J. Haraway, 2013), there is the need to describe and re-invent scientific discourse in ways that are not destructive for humans and ecosystem cycles but, instead, forge situated knowledge. These theories aspire to open the dialogue between ways to govern, secure, and sustain interconnected, complex and volatile social and natural environments. It's interesting to consider how post-normal science can support environmental protection by embracing a diverse range of knowledge systems. This approach can empower cultural, ethical, and social understandings, and potentially lead to the transformation of the ecological science

⁴ Post-Normal Science (PNS) is a new way of doing science taking into account complex systems in a 21st century context. PNS asks, as Ravetz (1999) cites "of 'quis custodiet custodes ipsos?' who regulates the regulators? (p. 647) to produce scientific discourse. To better understand what PNS is, it is worth citing him to an extent. In response to the new conditions of science in its social context, with increasing turbulence and uncertainty, the idea of 'Post-Normal Science' has been developed. Going beyond the traditional assumptions that science is both certain and value-free, it makes systems uncertainties' and 'decision stakes' the essential elements of its analysis. It distinguishes between 'applied science' where both dimensions are low, 'professional consultancy' where at least one is salient, and Post-Normal Science where at least one is severe. In the latter case, science derived from textbooks must be supplemented by other ways of knowing. Its theoretical core is the task of quality assurance; it argues the need for new methods, involving 'extended peer communities', who deploy 'extended facts' and take an active part in the solution of their problems. It is already being realised in many initiatives; for those it provides a theoretical basis and legitimation (Ravetz, 1999, p. 647)

curriculum. All in all, the way educators and policy makers construct curriculum knowledge production is a way of appropriating/assessing social projects and actors and this could also affect a sustainability transition.

6.2.2. Geography

The subject of geography is intrinsically connected with Earth studies, history, science, climate science, and biology. It could be said that it is a subject that, by combining different disciplines, it could be a transdisciplinary subject for sustainability education. The word sustainability, though, is not used in the curriculum of the geography subject. Part of the objective of geographical knowledge is, as described in England's primary curriculum:

As pupils progress, their growing knowledge about the world should help them to deepen their understanding of the interaction between physical and human processes, and of the formation and use of landscapes and environments. Geographical knowledge, understanding and skills provide the frameworks and approaches that explain how the Earth's features at different scales are shaped, interconnected and change over time (p.184)

The objective reference to physical and human processes, and to the interconnectedness and change of Earth systems, could be used by teachers as a provocation to expand on biophysical limits, system equilibrium, and climate change. The curriculum, though, does not explicitly mention that the pupils ought to acquire knowledge over the current environmental crisis and ways to mitigate it, as positive behavioural changes that could start from a young age. On the contrary, it focuses more on the acquisition of "knowledge of locations, use of maps, diagrams, numerical and quantitative skills and writing at length" (p. 184).

Further down in the curriculum, on Key Stage 2, the curriculum discusses knowledge of the regions like the Poles, and "processes of physical and human geographies, including climate zones, biomes,

vegetation belts, rivers, mountains and so on and human described as types of settlements and land use, economic activity including trade links and the distribution of natural resources including energy, food, minerals and water" (p. 186). The previous topics all link to sustainability, climate change science and global environmental crisis and inequality. As with language and science curriculum instructions, there is no direct reference in developing a sustainability framework in these subjects which could also be used as a minimum to generate collaboration between different or adjacent subjects. The SD in this case is left on the hands of the teachers and how willing they are to explore such concerns or on the hands of students that are concerned with such issues as it recently happened with *Fridays for Future*, a student led social movement calling for system change and environmental protection.

6.2.3. Other subjects

Other subjects of the Key stage 1,2 curriculum framework (see also Appendix 3) include: Arts and Design, Computing, Design and technology, Geography and History. In none of these subjects there is a reference to sustainability or ecology or the conservation/preservation of nature. Overall, it could be argued that they are constructed on the basis of an *anthropocentric* and *progressivist* modern framework. In more detail, in the Arts and Design the purpose is to "know how art and design both reflect and shape our history, and contribute to the culture, creativity and wealth of our nation" (p. 176). Arts and sustainability can provide a great interdisciplinary tool for students to develop a sense of care, responsibility and love for nature (reference from my interviewees). However, there is not such guidance in the curriculum for the teachers. This is not say that in arts or in science or in any other subject, teachers should stop teaching the specificities of their subject, but ecology could act as a framework for much of the subjects' aesthetics (Guattari, 1989).

For example, in Computing and in Design and technology subjects, pupils are expected to become "digitally literate-able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world" (p. 178). This contrasts with an overall exclusion of eco-linguistics/eco-aesthetics and/or becoming environmentally literate. The curriculum framework continues by linking technology to well-being as it states that "high-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation" (p. 180), while "understand and apply the principles of nutrition and learn how to cook" (p. 180) is a part of the Design and technology subject. Once more there is hardly any reference to ecology or sustainability and its contribution to well-being and nutrition, thus creating a further imbalance in the curriculum toward a more holistic education. Clearly the aesthetics here are modern/tech-aesthetics.

Lastly, in Geography and in History, one would expect, perhaps, to find more connections to the environment, however, the two subjects are based on traditional learning objectives with no reference to climate change. While there is in Geography a hint about interconnected systems as the purpose of study suggests "Geographical knowledge, understanding and skills provide the frameworks and approaches that explain how the Earth's features at different scales are shaped, interconnected and change over time" (p. 184), there is, however, no clear link to sustainability science. The same omission continues in the introduction of topics, such as changes occurring on the Earth surface, weather patterns, Arctic and Antarctic Circle, water cycle, climate zones and the distribution of natural resources. In History the purpose of study is "to understand the complexity of people's lives, the process of change, the diversity of societies and relationships between different groups, as well as their own identity and the challenges of their time" (p. 188). Climate change is undoubtedly one of the greatest challenges that humanity faces and perhaps a more ecologically framed curriculum could contribute to its mitigation.

Even though climate change or sustainability, let alone degrowth, are not mentioned in England's national curriculum there is in Geography and in History, or indeed in other subjects, the need remains to introduce to pupils the topic of sustainability in a non-coercive, non-ideological way, but perhaps in an evidence-based and ethico-aesthetic way. In any case, many eco-pedagogists suggest that an ecological or sustainability education should be infused in the whole curriculum and in all subjects as a framework and not as a sole subject, contributing thus to making the curriculum more interdisciplinary and transdisciplinary as sustainability is best understood through making synergies across different disciplines (Gadotti, 2010b).

6.3. Greek Primary National Curriculum

In what follows, I examine the Greek Primary curriculum and, as with England's, I attempt to identify parts that connect discursively with a sustainability/ecological framework in education. In doing so, I have looked at published Greek curriculum documents (http://ebooks.edu.gr/ebooks/v2/ps.jsp) and especially at core subjects, such as Science, Geography and Biology I have searched for references to sustainability and/or ecology and climate change. By discursively analysing these subjects I have observed that both the Greek and English curriculum are based on core humanistic language on traditional school subjects, but the Greek curriculum is partly differentiated as it takes on a more distinct environmental protection framework through these core subjects.

6.3.1. Science

In the curriculum framework for physics in the 1st grade on the topic of 'Electric Power', students are expected to "understand the use of electric power in everyday life" and "to take interest in the ways they can save electric power" (p. 524). This shows the first recognition in the Greek Physics curriculum of the importance of introducing the topic of sustainable energy consumption from the 1st grade. This contrasts with England's curriculum where there is no reference to sustainable energy use. Moving on to the second grade, the pupils are introduced to the topics of the cycle of water, the cycle of life and the notion of time with respect to these cycles. Again, they are introduced to the topic of "Water and Wind Power" with the intention to teach them the importance of wind and waterpower as forms of energy that do not pollute the environment during their use" (p. 525). The critical notions that pupils are expected to acquire through this topic, as cited in the curriculum, are "interaction, system and change" (p. 525). It is worth mentioning at this point that the Greek curriculum framework is organised under three thematic headings which are: the cognitive content; the general purpose - which is framed as the knowledge, skills, attitudes, and values; and the indicative and fundamental notions that the curriculum aspires to transmit to students. It is worth noticing here that England's curriculum also mentioned these general notions, but there was no distinct reference to attitudes or values of the physics curriculum. It could be argued the curriculum was managed in a quite cognitive, way aiming at transmitting the fundamentals of the physics language.

At the 3rd Grade pupils are taught about nutrition, energy transformation, and storage. Here they are expected to "connect energy transformations with the interdependent relationships of various living organisms" (p. 525). This is taught within the notional framework of system and change, and although there is no direct reference to sustainability or ecology, the transition of the knowledge and values of interdependence is made clear.

Another important point from the physics curriculum is the introduction to notional frameworks, such as notion of civilization as part of the energy transition discourses. In that, in the 5th Grade, pupils are guided to develop an energy saving attitude through the recognition of the importance of less intensive forms of energy for the environment. Also, at the same year, pupils are taught about acid, base, salts etc. and their properties, but are expected apart from the knowledge for these materials

in isolation, "to recognize their harmful implications due to their careless use" (p. 526). This can leverage a discussion about materials, and the relationship of our civilizations to materials, a basic topic for environmental and ecological education. The same pattern continues in the 6th Grade. Here students are introduced to the topic of energy and its sources. Apart from the more traditional scientific language that introduces students to notions of the basic forms of energy, energy transformation and storage, there is in the curriculum the expectation from pupils to "...recognise the major contemporary energy sources and to realise that their reasonable consumption can mitigate the energy problem" (p. 526).

Then they also need to "appreciate the importance of less intensive forms of energy for the environment" (p. 526). At this point, it could be argued that the Greek physics/science curriculum takes a sustainability stance as it directly refers to environmental protection by mentioning moderated energy consumption patterns and aspires to transmit more environmentally friendly values and attitudes. This contrasts with the previously examined England's national curriculum framework, where there is hardly any reference to the environment, sustainability, or the energy crisis. In comparison, the Greek curriculum highlights in many instances, and especially in the energy thematic content issues of energy crisis and mentions ways to mitigate this by reasonable use and by using less intensive energy sources. The other interesting point is that students are introduced to the notion of civilization through the energy topic, thus creating the link between material/immaterial culture, an important theoretical foundation of the previous post-structural analysis and also of the realisation of the importance of civil and mental infrastructures for an energy transition in degrowth. It's interesting to note the differences in the physics curriculum between Greece and England, particularly in regards to energy transition discourse. However, it's important to keep in mind that this observation is based solely on curriculum content and may not reflect what exactly happens in school units and practice,

an area in which further research would be beneficial. Additionally, it's worth considering that Greece's curriculum objectives on sustainability are influenced by EU policy.

The science curriculum framework continues with chemistry, as physics and chemistry are considered to share the same scientific fundamentals. Chemistry, according to the primary Greek curriculum, is a "civilizational good", which "can be detrimental for human life and for the environment" if not used wisely (p. 528). Along similar lines with the physics curriculum, chemistry's framework, which introduces the elements of water and air, directly refers to their value as elements that "create and sustain life" (p. 528). In more detail, for the topic of water, pupils are expected to "suggest ways to protect water from pollution and from the overconsumption of the water resources" (p. 528). Similarly, in the topic of air, students need to "...suggest ways to avoid air pollution, which constitutes a factor of the destruction of ecosystems' balance" (p. 528). Here is the first reference to ecosystem balance, and it could be argued a distinct environmental objective of the chemistry curriculum as it does not merely refer to the scientific significance of these subjects, but that they are framed in a civilizational/environmental context.

This is also made clear in as we go on to the topic of soil and subsoil. Pupils here are expected to "correlate the soil and subsoil with life, development and the economy" while they are again called to "suggest ways to avoid soil pollution which constitutes a factor of the destruction of ecosystem's balance" (p. 528). The way the curriculum constructs the topic of soil, pollution and ecosystems, as interdependent and correlated to the economy and civilization, is considered a sustainability framework, while it also expects students to suggest ways to protect them. Then students are introduced to carbon and its various forms in chemistry. Amongst them are oil and natural gas, for which students are guided to suggest protective measures of this form of carbon for the environment.

Again, the link between science, human activity, civilization and the environment is discernible and leans towards a sustainability framework in science.

Part of the science curriculum is the primary school subject: "I investigate the natural world". Except for the cultivation of the scientific way of knowledge and scientific enquiry to students, the subject aspires to cultivate the personality of students, as the curriculum states that students should learn to critically examine the positive or negative effects on individual and social well-being and the environment" of the scientific and technological advances (p. 506). There is, again here, a connection between scientific discourse of contemporary social and environmental problems. This is the more specialised part of the physics curriculum for primary school, and it is more detailed towards the purposes and ways to introduce its thematic content. At first glance, it does not differ greatly from England's science curriculum, as it introduces almost the same subjects and it is based on the development of scientific knowledge and mostly cognitive aspects of physical elements, as is the knowledge of the different conditions of matter, of electric circuits, magnets, power transfers etc. As we go through the curriculum, though, the environmental aspect of science starts to appear again in certain topics. First, it appears in the section on energy and nutrition, where students are taught the environmental problems of human intervention in various food chains. In the same thematic content, students are prompted to pay a visit to a local ecosystem (forest, lake etc.) to record the local fauna. By 6th Grade, the words ecology and sustainability start to appear more often, and an interdisciplinary approach to physics is suggested following also the general guidelines that have been discussed. For example, on the topic of acid rain, the curriculum suggests that students collect data about the impact that has on ecosystems by utilizing various resources from history, linguistics and computer science (p. 515), thus applying an interdisciplinary approach.

Then, as has been mentioned in the general interdisciplinary science curriculum, the environmental/ecological aspect of science appears more intensely on the energy thematic content. In detail, students are introduced to the production and consumption of oil and its byproducts. In this regard, oil is referred to as the major source of energy and raw material for the production of various products" (p. 515), highlighting thus its importance for the development of the modern world. Students are then guided to identify problems related to the overexploitation of petroleum, as well as to place fossil fuel energy within historical, economic, and ecological frameworks (p. 515). Then the curriculum suggests an assignment about: "Petroleum is very important to be burnt (Mendelev)" (p. 515) where students are invited to use history and language appropriately. Thus, the curriculum directly opens a discussion over the overextraction of fossil fuel and their implications.

The energy topic continues with the introduction of future energy resources, where students are taught about solar, wind, geothermal and other renewable sources of energy. In the same topic, students are asked to identify their local energy resources and their possible negative environmental implications. Students are also incentivised in the curriculum to find ways to consume less energy in their everyday lives, thus making the curriculum more geared towards students' needs and the local environment, something that as has been discussed is important in an ecological framework in education.

Another important topic that the Greek physics curriculum refers to is the term ecosystem. Here there is a whole section about "energy in ecosystems", where students need to learn to "explain why photosynthetic organisms constitute the basis for all food chains", "to recognize that ecosystems are characterised by the entry and flow of energy" and "to organise activities so as to sensitise the social environment toward the logic of sustainability" (p. 517). Here we can observe a direct reference to sustainability as a desirable social and pro-environmental behaviour. In addition, sustainability in the Greek curriculum is connected to the topic of ecosystem management. The interdisciplinary intention of the Greek curriculum is also worth mentioning. In that, the curriculum directly suggests at the end a variety of thematic topics that students can work on across different disciplines, such as the topic: "Energy resources in my place", where the use of math, history, language, geography, technology, social and political science and aesthetics is recommended (p. 520). It is worth noticing that aesthetics appear in the development of the ecological curriculum, a theme that has been discussed in the previous chapter for its importance for the development of eco-aesthetics (Guattari, 1989).

6.3.2. Geography

Moving forward to the geography curriculum, from the outset, the framework seems to entail environmental aspects. These are reflected in the below citations that state that pupils in the geography subject should:

"identify the need for a global framework and cooperation among nations for the resolution of common problems of all humans" ...

"to identify the relationship between the quality of the environment and the quality of life for humans, to care and take action towards its protection" (p. 16511).

Thus, the geography curriculum takes on an environmental protection framework as it incorporates two basic elements of the sustainability discourse as they have been discussed: the global character of climate change, and the link between environmental protection and well-being. As with the Physics curriculum, in Geography the main concepts that the units of the subject are organised under are that of space, change, system and interdependence which allows for the development of the sustainability framework, and for the application of interdisciplinary approaches. In addition, the topic of geography, as we read at the Greek curriculum, is to be studied from the local (direct environment) to larger units of space, like periphery, country, continent etc., something that could also encourage greater engagement with local environmental problems and its resolutions, as part of producing contextual and situated knowledge.

In the first 4 grades, geography is taught through the subject of "Environmental Study", which is broader than geography. Despite that, as we have seen, there is in the curriculum from the beginning the pedagogical aim of cultivating environmental protection. This becomes more apparent later when in 5th Grade on the topic of climate, the curriculum states that pupils are to "corelate, to a degree that their age allows, the climate conditions with human activities" (p. 476). Here the curriculum refers to human induced climate change, and despite the fact that it does not refer directly to climate change it allows students to think of climate-human relationships, something that has not been observed in England's curriculum.

The sustainability framework of the Greek geography curriculum continues on the topic about flora and fauna, where students are encouraged to learn about ecosystems balance and take a positive stance toward the preservation of it. The curriculum also aims to help students to "...gradually deconstruct the false perception that divides flora and fauna species between "useful" and not useful", thus directly encompassing a more sustainability framework in geography.

At the end of the 5th Grade geography curriculum, students are taught about the importance of industrial production and transport system to the country's economic and cultural growth (p. 480). Here, for the first time, the discourse of economic growth appears and is linked to human prosperity through the notions of economic and cultural growth. It could be argued at this point that the two discourses of environmental sustainability and human economic progress are present simultaneously, in the curriculum, creating (dis)continuous discourses.

In contrast, the geography curriculum in the 6th Grade gradually loses most of its environmental protection content. This is evident if someone observes that in the topics of sea and land, atmosphere

and climate zones, oceans and seas, there is no reference in these topics of the environmental problems that concern them, i.e., rising sea levels. There is, though, one reference to the changes that humans inflict on environmental systems, like forests and their consequences, but overall, it could be argued there are still big gaps about the climate change topic on the Greek curriculum in geography.

6.3.4. Other subjects

The Greek curriculum includes an additional autonomous subject for primary/elementary education that is called: "Environmental Education", as part of the programme for the development of interdisciplinary activities in schools. The purpose of this course is for the students "to recognise the relationship between humans, natural and social environment, to care for the problems that relate to that and to take action through special programmes, so as to take part in the wider endeavour to tackle these issues" (p. 640). The existence of this course, although not compulsory, could be characterised as an attempt at least at the discursive level to incorporate into the curriculum sustainability, as the environment is framed under natural, technical, socio-economic and historical contexts (p. 640).

The curriculum of the subject includes sections for most of the burning environmental problems and it is the first time that climate change appears as a discourse in the section on air and atmosphere (p. 640). The curriculum also entails concepts that are deemed quintessential for ecological/sustainability education, such as critical and creative thinking, the sensory experience of nature as a form of knowledge, the employment of nature's semiotics, respect for all life on earth and critical in the use of technology. One of the main foundational concepts of the course, as stated in the curriculum, is sustainability, which is added to the "classic" scientific concepts of space, time, taxonomy, change, unit and structure. It could be argued at this point that this is the first time sustainability and climate change explicitly appear as concepts, having studied the Greek and English primary curricula. This is, though, a non-compulsory course of study and thus subject to the will of schoolmasters or teachers to develop it thoroughly.

6.4. Conclusions

In summary, this Chapter explores and juxtaposes, where appropriate, the Greece's and England's curriculum for primary education regarding its sustainability and environmental objectives. The purpose of this Chapter was to explore the second research question, particularly question 2 "a) How is ecological education manifest in two contemporary societies in the North: England and Greece? b) how is education realigning its practices with discourses on ecological limits, like degrowth, in the context of mitigating/adapting to climate change?" This way and by applying a critical Foucauldian discourse analysis at the primary school curricula for these two European countries, I have tried to track down the use of words like "sustainability", "climate change", "ecosystems balance", "environmental protection" and so on, to see whether the schools' curricula include the sustainability discourse in their texts.

I have observed that the Greek curriculum may be closer to a sustainability discourse. This is visible in the incorporation of environmental protection discourse in almost all core science subjects, something that does not appear to be the case for England's national curriculum. In this regard, in England's curriculum there is an emphasis on "thinking scientifically", something that is strengthened by the incorporation of more technological and computing subjects, whilst in the Greek curriculum, there is a more distinct discourse of thinking sustainably, especially through the incorporation in the curriculum of the interdisciplinary programme of "Environmental Education". However, this observation does not allow us to reach general conclusions about climate change education in each country or the effectiveness of the curricula. What we could argue though from the discourse analysis, is that the Greek curriculum refers directly to and incorporates sustainability discourse in its document, something that has not been observed in England's curriculum to that extent. The lack of such language in the English curriculum and its presence in the Greek curriculum could be connected to a variety of ideological, political, governmental, or other contingencies. The discursive analysis of the curriculum has shown what can be said about sustainability in formal education in two European countries and to an extent indicates policy directions but does not suffice in exploring sustainability pedagogies in more depth. The next Chapter tries to do so in a multiple-case study research of pedagogies for sustainability.

CHAPTER SEVEN

A WITHIN-CASE ANALYSIS OF INSTANCES OF ECOLOGICAL EDUCATION

7.0. Introduction

In this Chapter, I move to the presentation of the data from the multiple-case study research. Following the previous curriculum text analysis, this Chapter explores the second research question in more depth.

According to the theory, it is beneficial for validity purposes in qualitative case study research and for the reader to better understand each case to conduct a within-case analysis, where each organisation is presented and analysed according to previous extant literature_(Yin, 1981). In this within-case analysis, I am presenting the institutions individually, drawing from publicly available material and from the data that I have acquired through online interviews with representatives from each case. By extracting from the interviews, the quotes that align with the ecological limits socio-political discourse, I hope to shed light to the research question with some in depth insights. In what follows, I am presenting education instances of sustainability teaching/learning from five cases in Greece and England: 1) The Little Tree School (LTS), 2) The School of Nature (SoN), 3) The University of Cambridge Primary School (UCPS), 4) The Whitworth Gallery (WG) and 5) Cambridge Curiosity and Imagination (CCI). The data derive from semi-structured online interviews with adult representatives of each organisation.

7.1. The Little Tree School

In this first case, The Little Tree School (LTS) in Greece, that I use it as an empirical research site. "The little tree that will become a forest" as presented in their Facebook page "is a self-organized pedagogical venture, that operates under the values of libertarian and experienced-based learning. It's operation stared in January 2014, in the forest-like area in Krioneri, Thessaloniki. It consists of three groups, the children's group, the parents' and the teachers' group. The first get together of the parents and the teachers was a result of the need and desire for a different kind of education" (https://www.facebook.com/tomikrodentro/?locale=el_GR). The school focuses on early-years education, as it accepts children between the ages of 3 to 12 years of age and it bases its practice in a variety of experiential learning pedagogies, amongst them the Montessorian method.

From the above introductory information, it could be seen why the case of the little tree is of interest for the research. The two main points it presents, that of its self-organization principle through its respective groups, that of parents, teachers and of course students is the first. The second is its location inside a forest. These make it a good case for the exploration of our topic.

There is a third point that could be argued to be of importance to this case; that of its intention "to struggle to publicly open the issue of libertarian education" (ibid). This may align with ecopedagogical principles that align with the idea of public engagement in the process of "re-politicization" of education, applying transformational and action-oriented practices that could, in turn, transform education as an institution overall.

As we go through the pedagogical framework of the school, we can see it connects its pedagogies to the concepts of open-endness, individual and collective autonomy and freedom, as well as to goals such as the development of creativity and communication with the natural environment in a process of interaction and being with nature. This becomes apparent in the explanation the school gives for the decision to be close to a forest, rather than an urban environment. More specifically, it argues that "...a school has no other option than be inside or close to nature"; an opinion attributed to Montessori and her pedagogical projects. Within these lines the school argues that "the child interacts with the natural environment; it plays with the animals and it uses plants and seeds in his/her symbolic games. He/she learns for the life and death of all living things that surround him/her. He/she can move more freely..." (παιδαγωγικό πλαίσιο).

It is highlighted in the above that nature is deemed valuable for the exploration, development and individuality of the child, and thus the school should nurture this connection. This is also evident in the following quotation from the school's pedagogic framework:

"Maria Montessori believed that the children are the biggest admirers of nature and that it is the school's duty to motivate for its exploration. The exploration of nature on the other side, awakens the instincts of children, their need to take care of others, the plant or the animal, in the here and now where there is the need".

The development of an ethics of care has been foregrounded earlier as crucial for the development of ecopedagogical practices and it aligns with the school's framework. Also, the co-dependent relationship between humans and nature is observed through a playful type of learning within nature that highlights the co-dependency between the human psyche and the natural environment, a topic that was particularly discussed previously within the Guattarian notion of the three ecologies.

As referred to in the school's brochure, "'Little Tree" is a self-managed educational endeavor operating in accordance with the principles of libertarian education and experiential learning. The schools inaugurated its operation in 2014, after a roughly 2-year cycle of direct democratic assemblies of participants (parents, teachers and others) that were initiated in a forest nursery, in rural Thessaloniki area. The assembly's main goal then was to create a 'different school', a school that is based on the "will for freedom and communal life", of 'individual autonomy' as well as "the experience of a direct democratic community".⁹ The school's then purpose is to create these autonomous individuals, but also to open-up to the public a conversation about liberal education and contribute thus to the social construction of education. It is worth mentioning at this point that the school's framework is political, as the participant's do not concede to the idea of 'neutrality' in pedagogy and thus it is influenced by "libertarian, anarchist and democratic education and philosophy". Hence some of its pedagogic/philosophical influences include the Modern schools of Francisco Ferrer, the Montessorian pedagogy, Freinet's "People's School", A.S. Neil's "Summerhill and the idea of democratic school and Paulo Freire's pedagogic work.

These principles/values are reflected then in the school's direct participatory tools, such as children's, parent's, companions' and community's assemblies, which are deemed fundamental for the operation of the school. Through these assemblies, the school aspires to attend to the principles of individual autonomy, self-determination and self-managed communities.

The environment in the school's pedagogic framework is referred to as one of the 'teachers', as "...is itself doing a great part of the teaching". However, in the school's conception, the environment is perceived as the wider material, 'sensorial' environment that can enable children's experiential learning. Here the school refers to various "subject corners", such as the math corner, science corner, visual arts corner and so on. The pedagogic team uses various material for the learning process but highlights that it avoids "the excessive use of plastic", something that could be indicative of the team's attentiveness to environmental issues.

Other important aspects of the school's pedagogy are their gentle approach towards children's selfcare routine using, for example, the reception space where there is enough room for children to prepare for the day, as well we the importance given to the sensory experience of children.

This could be argued to be reinforced by the school's stance towards the outdoors and its relation to nature. In particular, the school spatially consists of the front yard and of the allotment, which is at

the back and connects the school to the forest area. As mentioned in the pedagogic context 'the front yard is not subject to a "break", but it is used by the children equally to the indoors in regard to their activities. The allotment on the other hand is "a piece of land adjacent to our school, cleared and used by the community. The allotment has promoted bonding within our community and has rekindled our interest in ecology. We grow vegetables and other plants, and we get to know our neighbours" (data from Blog: http://alliotikosxoleio.espivblogs.net/)

This kind of spatial organisation of the school and of the learning activities allows for a direct and more free approach to building a relationship with the outdoors and to nature in regard to learning and experiencing connections with other entities as well.

My interview with the "Little Tree" was online <u>(see Appendix 3 for list of interviews - interview data).</u> I talked with three of the participants on the school, Sara, Silvia and Elly (pseudonyms), who are referred to as the 'companions' of the children in an attempt to deconstruct the hegemonic notion of the teacher and its connotations regarding knowledge. Part of the pedagogic team's role, as S says, is to

'decide what is to be done in regard to the pedagogic part of the school, the organisation, thus, of the everyday activities for the children and simultaneous in a way organising of an assembly which was constituted by us and the parents, which was also the main tool of decision making and was operating with unanimity and we also had the responsibility to present every three months in each family the progress made by the kids...' (LTS, Teacher, Sara)

It seemed to me that the communal and democratic ethos of the school was diffused across the venture, and this was evident throughout the interview with the group. Of course, even the interview was communal as all the three members of the pedagogic team were present in that. This is also highlighted when they were asked what the main purpose of their pedagogies was, Silvia replied:

'...it was to build self-managed community schools and I am using the plural because we were interested in opening this up to the public in Greece for more schools like this to open...' (LTS, Teacher Silvia)

Ecology came into our discussion in different ways. We talked about proximity to nature, the material world of the school, the seasons, the forest, but also about more abstract concepts such as degrowth and the distance between curriculum requirements on sustainability and the everyday practice in schools. The participants confirmed that being close to nature was a desire of many participants when decisions were made about where the school should be located.

'From the start, (ecology) was a matter which was put forward especially at the issue of the space, in which the school was to be placed, there was, thus, the requirement to be a space close to nature.'(LTS, Teacher, Elly).

The school then was located close to the Seih Sou Forest. However, the issue of ecology was referred to not just as this specific space, but also as the:

'activities that were taking place in the school (indoors) about ecology...but not just activities, but also the way that the space was made up, for example, natural material were preferred for the furniture and for the objects of the children's activities and the reuse and recycle were somehow part of the morning ritual'. (LTS Teacher Elly).

An interesting story emerged regarding how the school community became somehow part of the forest and got to know their neighbours (trees, animals, insects etc.) by clearing up and renovating the backyard, which now is called the 'agros' by the community. In that Elly says

'...we went to the back space, which was full of litter, debris etc. and we start cleaning it in order to use it as a communal space.... we started along with the kids to discover deeper ways in which you can include the ecologic dimension into the educational process and this started because it was a practical issue. We went out in the forest and we had both ourselves and the kids to learn how we can co-exist with all the rest of the entities that were there, how we can develop the space without intervening catastrophically...'(LTS Teacher Elly).

The way the participants described their non-interventionist, but symbiotic and exploratory way of developing this back yard, is a good example of a how learning by doing can create new ways of including the ecological in education, and the ways we interact with our surroundings in an environmentally just and balanced way. It is also a practical, hands-on approach to dealing with environmental issues, a de-romanticization of nature, that is highlighted within new-materialism and

post-human theories in education (Pedersen, 2010; Quinn, 2013b; Taylor & Ivinson, 2013). This viewpoint asks us to rethink our connection to our environment, through 'being in it' and interacting, rather than having a distant/rational and/or romantically oriented image of nature, as something either to be exploited or beatified. The onus here is on 'symbiosis', a useful term from our previous theoretical discussion that was also very much present in our discussion with the LTS Teachers.

The ecological/symbiotic aspect of the school's education was highlighted also through the conversation on the concept of environmental limits. In this regard, the participants discussed their 'symbiotic' take on the relationship both between human-human interactions and human-animal. It is important to emphasize here what Sara said about the non-anthropocentric way that they approach this relationship.

'...we approach these animals, and we also educate the kids in a non-anthropocentric way, namely we don't see them as entities that are there to satisfy our own needs, but that we live together and we share this space and some resources, let's say. At the same time, we had our garden that we grew, and we had a piece of the backyard that was left un-cultivated, and left to develop...for the wildflowers, caterpillars to develop and so on' (LTS, Teacher, Sara).

Perhaps the best way to elucidate a non-anthropocentric pedagogy is through Elly's school story about the earthworm and how the school community dealt with its presence at the backyard.

'Let's say for us as well this was a journey (the development of non-anthropocentric mindsets), when we first went out in the 'agros' and we started noticing some earthworms as we were digging. At first...we were saying to kids about what the earthworm provides the soil with and how this could help us with our gardening and how we can take care of these animals. Then we realised that this narrative about the earth worm isn't enough somehow, that these earthworms were there before us, they have their own lives, that they are not there to prepare the soil for our gardening....and then slowly we begun to talk differently about what these animals do there, how is their lives, we started doing some research in general, to learn about how do they live, about their communities, what do they eat and what their names are. So, for example, for the kids that they had the habit of killing the worms...and when the worms suddenly had their own names, Julious the earthworm, suddenly they started to become an entity, they weren't just the worms and the children started behaving very differently towards them' (LTS, Teacher, Elly).

This, I deem, is a beautiful and powerful way to elucidate how the anthropocentrism that to some degree we all have grown up with can be deconstructed and negotiated in a school environment when the other entities that inhabit this space are acknowledged, and in the case of this school, through 'naming', and respecting. It also shows that there is the constant need to negotiate anthropocentrism in regard to different entities, forces and so on, and that it is a more open-ended, exploratory process than a 'one-way fits all' method. Thus, responses to anthropocentrism can vary according to context and create innovative ways to learn about the 'other'. In a way dealing with our anthropocentrism can fuel such discussions.

Lastly, it is worth mentioning our discussion about degrowth with the participants of the Little Tree and some of the aspects they elucidated regarding education. In that, Teacher Sara recognised degrowth as:

'a kind of mindset that talks about decentralization, let's say small communities that live together and use the resources sustainably without accumulating wealth...'.

From that kind of definition of degrowth, the conversation went to the possibility of organising education with a degrowth mindset, where the participants responded positively to that idea. In that Silvia added the following important insight

'it is very important in order to create a degrowth school, let's say to agree with the fact that the environmental problems are correlated with social problems....so in a way to work out in simultaneity the relations between humans, as well as the relationship to the environment'. (LTS, Teacher, Silvia)

Staying within a similar line of thought, Sara commented with this complementing idea:

'I would like to add that our pedagogy does not follow at all the market rules, namely we don't want to create humans that can adapt to this kind of economic framework...but humans that can cover their needs and to live in harmony with the environment without devouring it'.

These statements, along with some other stances of the group toward degrowth, show a high compatibility of some aspects of the degrowth culture with the way the school operates. Some of these

are the rhythm of learning which Sara states are always considering the child's being in time, which is often a slower time; this can be viewed as a practice close to the slowness that degrowth stands for in juxtaposition with the hyper-productiveness of economic growth mindset.

What was also of importance was the emphasis from Silvia on the embeddedness of sustainability practices into everyday life and not just as imposed lessons to cover curriculum requirements.

'It is very different to do a one or two day project for recycling because it is told by the curriculum...I don't have any relation and no passion for the topic and to just play a board game, where the paper goes, where the plastic goes, and it is different from being the natural flow of the school...We don't highlight it as something extraordinary....It is an integral part of the process.'(LTS, Teacher, Silvia)

This resonates with the theoretical underpinnings of the degrowth and other ecological theories, as they have been discussed, that see the piecemeal and the embedded in the everyday life to play a crucial part in transforming our mindsets. The degrowth movement, for instance, is an advocate of a change in mindsets that is rooted in grassroots practices that renegotiate our relationship to the growth culture and to alternative ways of being with-in ecological limits. Although we can not assume that ecological mindsets would come out following a particular pedagogy, the LTS case has shown that experimentation, open-endness and a symbiotic culture are conditions under which alternative ways might grow.

7.2. The School of Nature

The second school I interviewed was the "School of Nature" (SoN) in Thessaloniki, Greece. This school is again close to nature and it houses children between 10 months to 6 years old. The school started 14 years ago, when Eva (pseudonym), the founder of the school, left her position as a teacher in public schools after 22 years. She told me

"...I was watching kids overprotected, very settled, with all their problems solved, children with no initiative, no autonomy, without trust in themselves...and I understood because I have a lot of experience with kids...that it's not going to help them in their lives because they will not be able to survive'. (SoN, Headmaster, Eva)

Then Eva continued, explaining what inspired her to open a private school close to nature.

'I left the public school and I made a school in nature, because I was born and grew up in nature, thus, it is my natural (environment) to be here and I believe...that if the children are not to be educated in nature, are not educated at all, because this is how they are constructed, not because some theory says so...'.

Although Eva told me that she doesn't believe in theories, my position as a university researcher and my assignment in this case enabled us to talk about theories. What struck me, though, was that most of the times Eva described from her viewpoint theories that I have read about without mentioning anything to her from her own experience, like the theories of degrowth and Rosa's "resonance theory". That was a nice surprise, as our discussion was quite spontaneous and I would say 'philosophical', as Eva touched some focal points on the matter of what it is to be human, humanity's relationship with nature and concepts like systems, change and the cycle of life and death. I remember feeling quite inspired by Eva's passion, like a student feels when acquires some new insights on the way they see the world.

Thus, when we discussed the difference between the theory of social Darwinism and social ecology, as two systems that pose a different view of nature, the first as competitive and hostile and the second as synergetic and based on relations of organisms and systems, Eva was really sympathetic towards the second theory. This was expressed in the following citations.

'We have reached to a point that humans cannot understand the value of the environment and they are completely egotistically closed off to their own needs that they are not just survival needs- I spent that much as I need to- everyone spends more than they need, being neglectful not just of nature but also of other humans that they don't have enough. We overconsume resources in the West for all the planet, and for humans in Africa, in Asia and anywhere else that they don't consume. Thus, we have reached an antagonistic human model'. Then Eva juxtaposed this spirit of competitiveness for growth, to the notion of freedom that is cultivated in the school.

"...when a child grows up in nature, is educated in nature, without huge intervention, simply experiencing things, namely our kids are free here in the fields, in the forest...to experience'.

Eva maintained that through this non-interventionist and ecological form of experiential learning kids cultivate a team spirit and their own personal autonomy and the competitive elements on the other side are thwarted.

Other important insights in the construction of a non-antagonistic (but perhaps agonistic towards life) individuality/spirit that came from our discussion was the importance of collectivity, and also the construction of the sense of equality to nature, or the view of nature as a value in itself.

"...namely we go to nature in a protective manner not because we are truly in nature, but because nature serves us. We extent to another level of values where we go to nature taking her into account as an equal value...all these things out there exist as entities...values/entities with which I can converse, ask, feel feelings and respect through the relationship, I create relationship'.

Eva's description of the relational approach to things and nature is close to previous theoretical frameworks I have discussed in this thesis on the ecological and the material, as well as non-anthropocentric viewpoints that could inform a new paradigm in education for sustainability and climate change in general.

I continued discussing with Eva more practically as to how all these add up to a potential model of an education that cultivates respect for nature, but also for the self and others. Thus, we discussed the rhythm of an ecological education, the role of technology in that education, the modes of evaluation in the school, and about the power of space in terms of maintaining closeness to nature. In what follows I will posit the most pivotal themes that came out from Eva's perspective in each of these practices, starting with the time or better rhythm of the school of nature.

'Here children...experience through the rhythm of nature...and that's human's rhythm too. That is why, as they say in the pedagogy of depth, Kostas Foteinos, a great pedagogy mentor, he says in one of his books: 'you ache because you walk with the rhythm of your pain...when you walk with the rhythm of your road you don't ache''.

Here Eva referred to the pedagogy of depth and the 'brown schools' as a resource and a guideline to their own pedagogy and described the rhythms of education as close to natural rhythms explaining that the rhythm of 'your road' is the rhythm of nature. Through this metaphor, she referred to the unprecedented, accelerated rhythms of production that have, amongst other things, affected education too and the way we perceive time and productivity in an unhealthy, rather frantic rhythm. This is juxtaposed to natural rhythms that allow for a more balanced way of living.

As far as technology is concerned, Eva explained that in the school the role of technology is 'auxiliary', in the sense that it is used as a medium through which you can obtain information. However, she stressed the difference between acquiring information and deep learning that can occur only through direct experience of the world around you, which takes us to the next basic statement of Eva's pedagogy about the space of education. In this, Eva stated that the space of an ecological learning is to be close to nature and that urban schools cannot be ecological in that sense. She fervently maintained that the space of an ecological school is within or close to nature and below she explained that opinion.

'How can you create relationship with something that you don't know...are we fooling ourselves? Children tend to forget what they have learned in schools...thus, when children learn within walls, without experiencing...what does descriptive brain means? I experience with all of my senses...I see, hear, feel, smell...I also create relationships...I relate...Then what we (humans) do? We enclose, a brain that is made to function descriptively, into a classroom, where it experiences abstractedly, and where it cannot conceive deeper concepts, such as system, change, evolution, which are macro-concepts that rule life and the human existence'.

This is how Eva perceives that a rightful and ethical paideia ought to educate children from a young age to understand deeper concepts through experiencing them in nature and in whole. In a sense,

then, here proximity to nature is also connected to human society and human individuality as it teaches these global concepts that are essential for our survival as species.

'If I understand through nature the concept of a system, I understand myself as a system, body-psych-spirit, which should co-operate for the system to function properly, for harmony to exist. What does nature teach us? Harmony-balance...then I understand that something personal affects the other and that society affects behaviour and that in turn I affect society, so I choose my behaviour in society and the society in which I am developing, and I am not going to stay anywhere thinking that is doesn't concern me, it does concern me, it affects me'.

Eva, starting from the experience of concepts in closeness to nature, explains societal system functions and the importance of maintaining balance and agency in society; themes that can be taught through balance in the ecosystem and in nature. In a similar vein, she explained the importance of the concepts of change and adaptation for our personal and societal progress that can be obtain only through experience in nature. When asked about degrowth and the potential of degrowth pedagogy, Eva stated that this would be an education that teaches a zero-waste mentality, but also that it should mostly concern the parents' education. *'How do you love the kid when you overconsume the Earth's resources for yourself?*'

This a simple question that pertinently describes, though, a degrowth mentality on ecological limits and environmental and social justice that go hand in hand. I will close the school of nature case with a quote from Eva's interview that conveys the feeling of hope in those who believe in the power of paideia.

'The only hope is paideia. There is no other hope. It is always (the only hope) not just for climate change. The only hope the man to become fully human is paideia. Not education because when we say education, always comes to mind cognitive information. That is what schools and universities mainly do. No. We say the only hope is paideia. Paideia is the way you live everyday life'.

7.3. The University of Cambridge Primary School

The University of Cambridge Primary School (UCPS) is my other case study. I approached the school after I saw in the Faculty of Education at the University of Cambridge, an exhibition the children

made about climate change, combining arts, text and science. I found the exhibition very innovative and wanted to know more about the school's sustainability ethos and pedagogies.

In this case, I talked with Kleo, one of the schoolteachers and pioneer of the school's sustainability programme. Before elaborating Kleo's sensibility about education and sustainability complex through her role as a teacher in UCPS, I need to inform the reader that this interview is dated back in November 2021 and that the curriculum has been updated since then after Kleo's feedback. Nonetheless, Kleo's passion for the topic forwarded sustainability further into the school's political ethos and it is worth exploring sustainability in education through her voice below.

I have a few different roles but I work in environment where your passions are really encouraged, so couple of years ago now a colleague and I decided we wanted to make the school more sustainable, so I'd already started recycling in the school and she already started like composting and things, so we decided to use the Cambridge Zero program as a kind of springboard to create our own school zero sustainability policy... So, it's not a role exactly it's more sort of a passion project that I had that the school has supported and then from there it's become part of our policy'.

From the above, we can observe how important the role of the teacher is in curating education objectives that align with sustainability. However, of equal importance is the whole school as an institution to strengthen and support the individual teacher or student in exploring their passions and interests. According to Kleo, the UCPS always accommodated the needs and interests of students and teachers alike, but also it was designed in a sustainable way.

"...the school itself is sustainable anyway in the way it is and so it was designed with automatic lights with underfloor censored heating and different things like that and our curriculum designed to be a sustainable and not sustainable but like to develop the idea of sustainability among the children so from early years stage to key stage two up to year six..."

I've got two children in my class...they decided that they wanted to make the school a more environmentally friendly place so they broke some application forms and they were empowered by the headteacher to order from the limited school budget from previous funds and they've organised the little children to go out twice a week just to clean up the environment and make it safer...and it's really nice that when these ideas happen, like suddenly someone wanted to start an eco-council, somebody wanted to do posters put it round the school, there's been children in key stage one wanted to do a protest to do with climate change, so they

were empowered to make like signs and go around the school and outside and chant and things so it's about empowering the children to make these decisions...'. (UCPS, Teacher, Kleo)

Kleo discussed the multiple ways that sustainability feeds into the school's learning philosophy, both in the curriculum and in everyday practices, that promote a sustainable lifestyle and that these two are complementary and both equally important.

'So, for example...in year 5-6 or so we're doing natural disasters so we're reading a book called flood lands...is all about how the sea levels have risen and you know it's all about survival in that sense but then we've used that as a springboard to talk about you know what the COP 26 summit in Glasgow and things like that so it's using it cross-curriculary...'

"...we don't just teach a lesson about climate change it's about oh don't forget to recycle your pen or don't forget to turn the lights off when you go out...so it's about those day-to-day practices, but then also sitting down and thinking right well we're reading a topic about rising sea levels so how this link to our topic or so how that link to our lives so it's about weaving it in throughout the curriculum and throughout everything they do at school and also about teaching it explicitly and going to the science of it as well...'

Kleo explicitly mentioned that the pedagogy they utilize is "topic-based learning", and combined with

their STEM week and art week programmes they run they follow a inter-disciplinary approach to

learning that it aims at developing skills for life.

"...we do encourage that throughout our curriculum so making sure that the children don't just learn their skills for a specific subject it's a skill that they need to learn for life they need to apply in other areas".

Kleo also mentioned the importance of outdoors learning and being out for various reasons, not just for teaching, but also for relaxation and mindfulness purposes. Nonetheless, outdoors learning is valued in terms of learning about the forest and cultivating an attitude of respect and care towards the environment.

"...we've got a forest, so we'll often go out into the forest for other lessons it's not just limited to forest school we have an outdoor classroom which again is not just for specific outdoor related subjects it's about a nice blend between teaching things explicitly so using the forest for a school, but also going out there, do a bit of mindfulness, so it's just a balance really'.

"... the children have forest school lessons we have a specific forest schoolteacher so they will get at least 1/2 term of forest school a year which means that once a week they go out and they do a forest school lesson.
They're taught that anything that they find in the forest must stay in the forest because of the ecosystem... We did have a wildlife camp as well and that's kind of brilliant running but that was really good because the children could see that they shared the space with the animals...'

Other important pedagogical components of teaching/learning ecological attitudes I discussed with Kleo were the objects or materials they used in the classroom and their relations to the material world, about other non-Western or local knowledges that can transmit positive socio-environmental attitudes, and the assessment of all these in the school. In terms of the objects and the relation to them, Kleo mentioned it was important to them they created the recycling boxes and labels in her classroom; in that way children could learn to value the objects and develop a more sustainable attitude toward waste management. Similarly, the children were taught to unplug electronic devices and be smart in terms of energy saving. Apart from developing an attitude of frugality and being economical when comes to the objects they use, children were also encouraged to learn to create an attitude of enjoyment with objects that were there to facilitate their aspirations and interests.

"... the children that have created the litter picking team they've been allowed to purchase jackets which say eco-council, so in terms of objects in that way that facilitates more of an understanding of the importance of their actions".

This idea of connectedness/resonance to the material world, and the sustainable management of it, is essential for transmitting earth-centric values. This way of thinking passes then also to the cultural side of learning and how ideas over the material world have an impact on the cultural and social understandings of socio-environmental issues. It also emphasizes that material and immaterial are in a constant relational and interactive or intra-active (Barad-like) relationship that co-create cultures and sociabilities. Kleo described this connectedness through the relationship between local attitudes and learning about non-Western cultures and faraway places that ultimately affect the eco-sphere.

"...but in terms of like cultural differences and things that are specific to the locality, again like in our topic for example year 3-4 did a topic about fashion last year, it was about sustainable fashion and it wasn't about you know what clothes looking good, it was all about you know the journey of a pair of jeans and you know how many gallons of water goes into making a pair of jeans, is that sustainable? what

about the environment that is affected in countries like Nepal and the Philippines when factories for shops that we shop out here in the UK are churning out toxic waste into the rivers, so lots of what we do covers cultures around the world and addresses issues that face us both here locally...'

Moving to the assessment of their pedagogy, Kleo said that when it comes to sustainability context the assessment is made internally in the sense that the teachers are the only assessors of the outcome of their project.

'The way that climate change and sustainability would be assessed depends on the topic and this is what teachers have made for that topic, obviously a little bit different from English and math.'

I would like to close this case by citing Kleo's words about the role of teachers in transmitting socioenvironmental values centered around the concept of change, a concept highly referenced by sustainability, degrowth and socio-ecological frameworks.

'In my opinion as a teacher the most important thing I could teach the children is that they can enact change now because I think that there's a huge culture in the world of saying, oh, yes we need to change this but it's something that is like a vague idea that might happen sometime in the future...'

Here Kleo pertinently poses the matter of the present when it comes to socio-environmental change; something that resonates also with the idea of urgency that climate change discourse has established. In what follows, Kleo describes the way the school can address the issue of urgency through developing active subjectivities empowered to create change, and that this is an attitude that the school can actively contribute to.

"...do it now and at lunchtime that day they created a poster or wrote a letter and at that moment they had that idea and then they did actually change at that moment in time and I think that is one of the most important things because that's an attitude that needs to change... they felt really important, they've established a timetable, you know...and children who are going out with the picket and things like that, you know, the protests and prices and the eco-council, so many different things those children have been empowered to make that difference here and now in our community and hopefully they'll keep that with them and they can make that difference in the wider world as they grow up'. (UCPS, Teacher, Kleo)

7.4. The Whitworth Gallery

My interview with Dona was about the connection between the arts, the cultivation of environmental stewardship, and a mentality of care for nature. The choice to talk with the Whitworth Gallery (WG) in Manchester, an urban British city, emerged after I came across a Whitworth presentation on forensic architecture and environmental justice and after I saw the gallery's work on education and sustainability through their projects on the matter. My interest was particularly in exploring the intersection between the arts and environmental problems in education after I encountered in ecopedagogical literature its importance for designing ecologically caring pedagogies and drawing from the earlier theoretical elaboration on Guattari's eco-aesthetics and subjectivity (Chapter 5).

Dona mentioned at the start of the interview the importance of being close to nature as a crucial factor for the development of its sustainability framework, a theme that keeps resurfacing in all of the cases so far.

'...so for us, it feels like that's what makes our gallery quite unique the fact that we're a gallery in the park'. (WG, Dona)

I discussed with Dona the programme called Changemakers run by the gallery in collaboration with a primary and secondary school involving arts-based courses in the school and gallery visits. As Dona mentioned, the purpose of the programme is to cultivate young people's decision-making and active citizenship through the arts and active learning experiences.

"... so now's the right time to really capitalize on that and get them you know harness all those passions and realize that just because you're a child doesn't mean to say you're not gonna affect change".

Dona stressed the importance of urgency when it comes to taking action towards the things that changemakers are talking about when it tries to pass on the message of "let's do something now, not tomorrow". In addition, this action-based mentality the programme promotes is aimed at engaging art and not an 'arts for the sake arts' kind of perspective. 'the whole gallery is kind of an ethos, in fact, it is using art as a tool for positive social change and that's where that all comes from it, you know, it's, yeah, you coming to an art gallery but you're actually thinking about bigger things in some respects, it's not just community art picture, it's about how can we use this art to talk about things...'. (WG, Dona)

This is close to previously discussed theoretical frameworks of the arts in various social frameworks and activisms as a form of collective expression and a commoning technique, rather than a middleclass exclusive practice. In Guattari (1989), the arts play an important role in the construction of ecologic mindsets, as they can reveal ways to reestablish the connectivity between human and ecosystems in a non-fixed way. This is likely of importance for the construction of a subjectivity that cares and caters for the environment and for the limits that it poses.

Changemakers, according to Dona, also is meant for young people to broaden their career perspectives, whether it is in the arts or elsewhere, so as to be more conscious and driven in that respect too. Also, Dona referred to the power that the kids have over their parents, which can affect them in changing their attitudes toward the environment.

I do think there is that pest of power that if we can get the younger ones to start you know encouraging their parents to think about it that's really helpful...'

These are two side-effects of the impact that ecological programmes in schools can have, following a cascading kind of learning from one generation to the other. It is also a good example of how our societies are networked, resembling a web, with infinite possible connections that affect our social experience, like the connection between parents and their children or young people's career decisions and the market. These are all co-constituent relations.

Then Dona talked about the gallery's exhibition called the 'Cloud Studies', a forensic architecture exhibition concerning various cases of socio-environmental injustices and how forensic architecture helped shed light with evidence for the respective court cases. Forensic architecture means. Of

importance here is the environmental injustice case in Saint James, America, Louisiana, called "If toxic air is a monument to slavery how do we take it down?"

Dona described this exhibition through a very powerful storytelling about a tremendous socioenvironmental injustice that took place in Mississippi, America. Basically, through forensic architecture, the people there gathered evidence of toxic air pollution. That was happening in the places the African Americans lived for years, and it is a telling example of disregard for human life and for life in general for the extraction of petrochemicals. Here is the story as Dona narrated it to me through her experience of the exhibition at the Whitworth Gallery.

"...it was quite frightening really...if you imagine they shared a map, I think it was the Mississippi, and they've been commissioned by the people that lived there and many years ago when it was called Freetown some parts of it because when the slaves were free so when the slaves were there but on the plantations, there were burial mounds thereof basically people that have passed away, families, but these are obviously where ancient burial mounds and you could see on the maps as they overlaid over time how these mounds these burial sites have become less and less and the petrochemical companies had started to encroach upon them...'(WG, Dona).

Then Dona explained how these petrochemical companies were aware of the toxic air pollution and despite the fact that they could predict which areas were going to be most affected, they chose to place African American people in these places. This story is indicative of how environmental injustices are often intertwined with socio-economic and racial injustices, as historically 'toxic', polluted areas and wastelands are often inhabited by the most vulnerable.

"...so not only have they systematically disregarded the families, the ancestors by building you know these horrible petrochemical companies, but they also worked out how the wind would come in and when gasses, which they could identify what they were and they were not particularly hazardous, you don't really want to inhale them but nevertheless on their own they weren't deemed as really toxic, but if the wind blew them in a certain direction, so that these separate chemicals in the air connected, they then became toxic and they worked out if you looked on the Mississippi there were places where it was less toxic, they were the white places, the places where there were more African Americans living were the really toxic places and there was evidence to suggest that ill health was based on the fact that they were getting from this toxic air from the petrochemicals...' (WG, Dona)

Dona's story is very powerful and it shows how arts can assist in not only informing the public, but also making us wonder about, grieve over, reconsider and evaluate our actions, mutations, silences and hubris as human beings. The following quotation from Dona's interview conveys all that can be told only through the arts.

"...it was quite frightening when you could see like, you know, they'd have using the sort of primary colours and green in there you could see how toxic these things were on this massive map and how people were still continuing to pass away but at the same time they had been given this place to live (Freetown) and...it's frightening really you're looking at stuff and sometimes when you're looking at art, yeah, some of it is about people that are living or have died or have suffered horrendous things but when you're looking in that exhibition I think what really hits you is the fact that you are observing what has been allowed to happen... and this has been an opportunity to highlight not only what's going on there but also to dig a little bit deeper, you know, where you are and I mean obviously for that particular place it's been going on forever and ever and it is called cancer alley because everybody's dying of cancer around there but only the African Americans...'(WG, Dona)

7.5. Cambridge Curiosity and Imagination (CCI)

My next interview was with two representatives of the Cambridge Curiosity and Imagination (CCI) initiative. CCI is a charity founded to support children and local communities to explore innovative and creative learning experiences along with artists. To be more precise as we read on their website:

'Cambridge Curiosity and Imagination is an arts and well-being charity working with artists to build creatively healthy communities. We enable people of all ages to discover their own powers of imagination and curiosity and enjoy living, learning and working alongside each other' (https://www.cambridgecandi.org.uk/).

CCI was founded in 1998, when a group of artists, practitioners and researchers "identified the potential for community and education projects to be enriched through communication with artists" (<u>https://www.cambridgecandi.org.uk/about/about</u>). One of their landmark projects was in 2004 when they brought to the city the Reggio Emilia exhibition- '100 languages of children'. Until today, CCI works with artists in different venues, from classrooms to the forest, and tries to engage teachers,

communities and learners in creative learning projects. Some important aspects of their work include, 'work with educators to remind them of children's creative powers and how to support them' and "reconnect communities with their local outdoor spaces", which brings strong ecological aspects to their projects to develop as they referring to their website "eco-capabilities". These were the reasons I chose to approach them for an interview, as I felt their work on ecology through the arts could shed some light into the development of ecological learning. The fact that this is a charity was another reason I decided to include them in my set of research sites, as it enhances the diversity of the sample in the case study methodology, which in turn strengthens the cross-case discussions and insights (P. Brown et al., 2008).

What struck me the most in CCI's interview is the way they perform the artistic subjectivity into their projects and mindset. This kind of artistic subjectivity involves, in summary, an open-ended stance toward things, ongoing learning through experiencing, a sense of care and slowness. These are some of the important insights that I took from this interview that also resonates with relevant ecological and well-being aspects of my project. As Elsa notes

'CCI has always had a very reflective approach to the work it's doing with this ongoing learning approach to its projects where reflections are then embedded back into the practice...' (CCI, Elsa)

Then Elsa also reflected on how CCI'S projects engage the local environment and local communities in dialogue, by referring to 'Chalk Streams' a project that CCI run on the impact of climate change on these local streams, and which was exhibited on the museum of zoology in Cambridge.

"...there's also been work to raise awareness and share stories around trees and the importance of trees in the local community, um, so yes it's about exploring what's on your doorstep. It's a very concrete and tangible engagement with sustainability and environment that's rooted in the local community, local landscapes, and changing landscapes as well and that change can be from development they can also be due to climate change as you've seen with the chalk streams so it's really kind of a strengthening of people's relationships with nature and that's been particularly successful and transformative for children and therefore schools where children have really responded quite strongly and very positively to having time and space outdoors in nature and schools have seen how these opportunities often aren't accessible for children...'(CCI, Elsa)

There is a strong connection here between CCI'S work with being outdoors in nature and the benefits that this can have for the individual, as well as the whole community. Moira, pertinently noted this when discussing about the well-being aspects of being outdoors.

I think like the focus on ecologies as inherent in the placemaking but there's also kind of a well-being aspect which I think Elsa was touching upon that by being outside in nature responding to that environment and creative ways and considering your place within that environment that's just slowing down it has benefits for well-being for children and everyone's involved...' (CCI, Moira)

In a sense, CCI's work nurtures eco-capabilities and its connection to schools emphasizes the importance of such projects in schools. It could also be thought of as an example of inter-professional co-operation and beneficial networking between artists and educators that could enhance the learning experience of not only children, but also adult professionals. The Whitworth gallery case elaborated above and CCI introduced here to showcase the different stakeholders that educational institutions can liaise with to promote an eco-logic or sustainability mindset along with an artistic subjectivity objective. In these particular cases, the emphasis is on the cultivation of artistic senses, through creative expression that can also benefit ecological aspects of teaching/learning.

I think what I see most is that when you don't instrumentalize the arts as sort of within kind of a subject or curricular lines, you're creating something very discrete. You're learning how to paint in a skills-based space but when you actually take like the principles of being an artist of slowing down of noticing of asking questions I think that way of interacting and seeing the world differently can help bring into view and can help see your environment and landscape and your position within the world and a completely different way and you can ask questions that might not have been asked otherwise and yeah I think it's just putting on a different lens...' (CCI, Moira)

Following this line of thought, Elsa and Moira also highlighted the transformative, regenerative and collectivity effects of the arts on the learning experience of children, something that can also be restoring and re-narrating of humans' relationship to nature.

I think one of the wonderful things about the practice is that when children are allowed to inhabit their space in this way the grown-ups around them tend to see the children differently...and so something that's always struck me is that actually giving children space to ask questions can be just as powerful or even more powerful than focusing on making sure the children are answering questions...'(CCI, Elsa)

"...I think collectively not knowing can be really disruptive in a good way. When educators are curious or are slowing down and paying attention to children's thinking it opens up the expectations of what children are capable of doing or capable of contributing to knowledge and they're not looking for a particular answer or just, yeah, there's something really generative about not knowing together and exploring together side by side...' (CCI, Moira)

Taking from this open-ended, explorative standpoint that the arts can provide education with our conversation took us to the degrowth concept and how close could that be to the principles CCI upholds to. Although I only mentioned degrowth towards the end of our conversation, some of the overarching values of degrowth, like slowness, open-endness and community building, were already mentioned by the Elsa and Moira. The concept of degrowth only came then to signify more specifically this idea of ecological limits within CCI's practice, where the Elsa and Moira responded positively that the concept of degrowth has a place in learning/teaching for environmental values and in CCI's culture.

'A lot of CCI's work starts from a principle of not that we're lacking, but we already have so much that we can draw from, both in terms of our personal resources, our collective resources, the land and space surround us, so I think in that sense it connects in a, yeah, in a kind of abstract but very concrete way to that, and it seems like degrowth assumes that we constantly will need more and more and then, yes, CCI very much attends to the resources that we bring to each experience.'(CCI, Moira)

"...and yeah I think that's something that draws very much from artists' philosophy that less is more... that actually from a place of... by working with what you have you enable creativity because you look at what you know the kind of material resources you have in front of you and that's where creativity and imagination and vision comes through, you know what can you do with what you already have.' (CCI, Elsa)

These insights from Elsa and Moira about degrowth connect to degrowth's concept of "conscious frugality", the idea that living within limits posed by the ecosystems starts not form a place of lack, but of abundance of material/natural wealth around us, if only were to be distributed and used wisely and equally. This is a very powerful prerequisite for degrowthers that would need the individuals and

the whole society to be educated in this kind of lifestyle. From what we have seen so far, the transformative and regenerative qualities of the arts could facilitate such an endeavor, as what degrowthers always support is that real societal transformation will take more than a mere energy transition to renewables. It will take the transformation of subjectivities, a task that goes hand in hand with energy transition discourses and that education and pedagogy can play a big part in. This is why there is a real need for CCI's work and educational institutions work to connect with things like degrowth and climate change in a transition framework. Whilst it is not clear what education might look like in a degrowth context, this is also the beauty of regenerative politics and beings. One thing that is certain is that educational institutions will need to be ready to respond to climate change and the heightened inequalities that this brings about in ways that can perhaps re-narrate education's role in the construction of our subjectivities in relation to our natural environment.

7.6. Conclusions

In this Chapter, I have presented the cases I have worked with in my research. In doing so, I have conducted a within-case analysis of each case, as the theory suggests this is an effective way to analyse qualitative in-depth data in a multiple-case study research. From the within-case analysis I have tried to show the variety and sometimes conflicting ways that sustainability and education come together. This is why I have presented five different institutions, which utilize different approaches to sustainability in their pedagogic work. However diverse these approaches are, there are some emergent themes that we can highlight in the within-case analysis. The most frequent ones are a) the importance of proximity to nature for ecological learning to take place and b) the idea of 'change' of attitudes as overarching patterns of environmental pedagogies. As has been observed from the data, all five cases concede to these two concepts 'proximity to nature' and 'change in attitudes', although the ways to

achieve these might differ. Both concepts are of importance, as they empirically match the research's extant literature, through the notions of 'connectivity' and 'transformation' that have been discussed in previous Chapters. Although we cannot come to general conclusions about the ways to perform sustainability and ecology in education in Northern contexts, as this would go against the research's open-ended structure, we can, though, agree that an ecological pedagogy should entail to some degree the objectives of connectivity to nature and transformation of the modern mindset.

CHAPTER EIGHT

EDUCATIONAL TRANSFORMATIONS STEMMING FROM ECOLOGICAL PERSPECTIVES

8.0 Introduction

Throughout this thesis, I have investigated the implications of sustainability and climate change discourses on international development discourses and education. Considering the multivariate, complex and historical contingencies of socio-environmental emergencies in education discourses, as well as their exclusion from the same discourses, I have shown the conflicting character between modern human civilization and ecosystems' balance. I have particularly focused on how statistical tools and economic resource management techniques, like GDP accounting, have created a cultural phenomenon globally; that of the evaluation of the quality of nations based on their state of development of their infrastructure, together with their natural and human capital. In that, education has been central in advancing the imaginary of modernity and it is now a standard indicator of progress and especially economic growth (Komatsu & Rappleye, 2017; Robertson, 2005). Within this framework, education is seen as a vehicle for economic growth through the construction of the subject homo economicus, which has led, though, to further dissociation of the human subject to nature, usually treated as an object of study or exploitation for economic growth. In this separation, education has played an instrumental and auxiliary role, as it drives competitiveness and growth; two dynamics which have come to be associated with the market economy and modern governmentality (Dale & Robertson, 2009b; Illich, 2002; Irwin, 2017; Olssen & Peters, 2005). Viewed in this way, education is

a driving force as it can steer citizens' preferences and create lifestyles that are co-constitutive of social selves and social orders through its power to frame mindsets and create growth opportunities. On this basis, my research aims to investigate the relationship between education and sustainability discourses. Specifically, I am interested in exploring the different ways in which education is involved in sustainability discourses and how this relationship might impact educational discourse. To guide my research, I have formulated the following research questions:

1. How is education constituted in late modernity and specifically how is it implicated in the context of economic growth and climate change discourses?

2. a) How is ecological education manifest in two contemporary societies in the North: England and Greece?

b) and in what way is education realigning its practices with discourses on ecological limits, like degrowth, in the context of mitigating/adapting to climate change?

In exploring these questions, emphasis was given to the political power that certain global institutions exercise to education discourse (UNESCO, OECD and the WB), especially in late modernity, where political power is considered decentralized from rigid political structures. At the same time, the phenomenon of globalisation and internationalisation of political decision-making was highlighted through what might best be understood as more centralized political trends, like neo-liberalism and Sustainable Development (Blaser, 2010; Dale, 2005; Dale & Robertson, 2009b; Dale & Robertson, 2005; Tikly, 2020). Despite the fact that governance is more diffuse in late modernity, critiques of the neo-liberal model of development argue that progress, and to an extent political power, is narrowly defined and distributed unequally, so the discursive practice of development remains unchanged. Economic growth, thus, (re)produces a global development discourse that creates exclusions of key elements from development calculations, including the environment, a common externality in the economic growth decades from the 1960s up until roughly the 1990s (Schmelzer, 2016).

As has been shown in this thesis, this discourse has been challenged recently after climate scientists have revealed the major role of industrial development's contribution to climate change (Bachram, 2004; Smil, 2019). In this context, SD and climate change, natural-based solutions mitigation and adaptation policies are all emerging as legitimate socio-political discourses of "clean development" by bringing to the fore the subject environment and having a more inclusive approach to development along the lines of legal, civil and political society (Broberg, 2020; Kabisch et al., 2016). Despite these discursive shifts, the socio-environmental effects of climate change inescapably pose political and economic questions, as to whether current globalised capitalism can sustain us all (including the non-human), and at what cost.

Drawing from the above problematique, social scientists and ecological economists have come to coin the term 'degrowth', as a substantial contraction of the largely capitalist economic sphere in the North, which together with technological advancements in the field of energy transitions can lead to more sustainable futures. These theories, along with innovative socio-political insights that stem from political ecology and post-human theoretical frameworks pose significant challenges for current modernist assumptions and for educational institutions. These theories have been explored in this thesis, and despite their differentiated positions within development discourses, they are considered here as (dis)continuities of the late modern discourses, as "exteriorities within".

Considering all the above, this final chapter presents, 1) the substantial findings for education in the form of narrative insights from the theory and empirical research, 2) a discussion on the political and methodological reflections of the research, along with its limitations and implications for policy and 3) final thoughts.

8.1. Reflections on Education

In this thesis the suitability and applicability of universalized management techniques and knowledge in a complex, fragmented and (dis)continuous modern world has been contested. It has been shown from a Foucauldian viewpoint, the diffused nature of power and the interplay between powerknowledge which also informs this study on the issue of education. In education, which concerns this study, these social forces can inform the complex and contradictory character of education in the context of climate change and point towards enabling/constraining mechanisms of an ecological education according to context, especially in the North, which is the focus of this study.

In this, scientific discourse is the dominant knowledge form in the modern North context and thus to an extent determines who can speak of the truth and how social reality is perceived; something that is evident in my analysis in Chapter Six of the curriculum at the Primary level in both England and Greece. This discourse, though, is one of many that could be authoritative discourses. Viewed through a Foucauldian lens, Vainio & Paloniemi (2012), note that "...those in powerful positions have the authority to determine which social constructions of reality become 'truths'" (p. 119). Education is founded on the premises of the scientific/humanistic language that has shaped historically its modernist and anthropocentric assumptions which, in turn, have constructed the dichotomous view of humanity versus nature (Kahn, 2010). Climate change scientific discourse, and sustainability science, though, challenge these assumptions and pose new problematisations for education. One of the basic problems of modern education in this context becomes the teaching of science and how it reproduces this binary view of reality, exclusions of others and exploitative relations, but also how it can be transformed within a climate change framework. "Hyperindividualism, faith in progress (especially science and technology), and extreme anthropocentrism" are, according to Lloro-Bidart (2015), modernity's "root metaphors" (p. 135). Human's need to connect to the world, including social and natural worlds, is also very much present in this modern narrative. This creates dis-continuities, ruptures and contradictory subjectivities (Guattari, 1989), where these human needs for relationality- 'resonance' (Rosa, 2017) is more often than not contradicted, suppressed and/or excluded from prevalent social norms and institutions.

From my discursive analysis of England's and Greece's curriculum for primary education, it emerges that the science curriculum does not challenge this instrumental anthropocentrism; a theme that ecological perspectives in education have critiqued (Elliott & Young, 2016; Kaufmann et al., 2019; Mies, 1990a). Thus, human-nature relationships are "reified in educational practice and research" (Lloro-Bidart, 2015, p. 128). In this, Lloro-Bidart discusses the term "political ecology of education" as "insights from political ecology and the political economy of education to unpack human-nature relations in educational spaces, broadly defined" (p. 131). She then argues that existing literature of the Anthropocene broadly suggests the following three theoretical/practical shifts to overcome anthropocentrism: "1) interdisciplinarity, transdisciplinarity and cross-disciplinarity, 2) community-based approaches in the natural sciences 3) alternative modes of thought, such as post-carbon social theory, Indigenous and ecofeminist/posthuman theories" (p. 133).

These theoretical and practical transformations have also emerged in this thesis and in the enquiry of ecological motifs in education. It could be argued that the theoretical frameworks in this thesis closely match the empirical data, indicating that innovative, interdisciplinary, and alternative ways of doing and managing education, are considered crucial if the field is to actively transform socio-environmental relations. Drawing from my research, I would add to the list of practical/theoretical transformations that of degrowth and theories of ecological limits, as important components of ecological education

and specifically meant for the Northern context. These theoretical standpoints can inform a nonmonetary aspect of education, as opposed to the human capital model of education that has been discussed. This non-monetary, but value-driven aspect is considered discursively crucial for an education which prioritises sustainability, as has been shown by the theoretical and empirical data of the research by producing positive socio-environmental subjectivities.

How could a non-anthropocentric, degrowth-driven, in the sense of respecting planetary limits, curriculum and pedagogy be constructed then? It is now widely acceptable in pedagogical research and the "learning by doing" literature that "contextualization" and "localization" of the science curriculum is conducive to learning through experiencing science in real life situations (Tupas, 2019). Tupas (2019) suggests the use of the local biodiversity as "a source of science teaching" (p. 154). Notwithstanding that experiential and contextual learning is recognised for bringing about positive learning experiences to the learners, this is mostly attached to its method and not necessarily to its content/philosophy of teaching science. Thus, a well-practiced contextual science curriculum could still transmit to the learners the same modernist assumptions about nature and human-animal relations. Tupas (2019), for example, regards biodiversity in the curriculum as a resource, which is closer to a utilitarian view of nature for scientific purposes.

This is exactly the point that ecofeminist, post-human, sustainability and relationality frameworks have critiqued in doing/learning/teaching science, as a discourse conducive to humanistic values that are catastrophic for the environment due to their dichotomous and extractive logic (D. J. Haraway, 2013; Kahn, 2010; Lloro-Bidart, 2015; Mies, 1990). In this regard, Elliot and Young (2016) pertinently note how this dichotomization takes place from early childhood education;

...through the colonising practices of control, mastery, romanticism, ownership, destruction, and silence that depicts nature as a tool in a human project...rather than a multi-relational exchange of belonging with nature (Elliott & Young, 2016, p. 60).

Overcoming anthropocentrism is perhaps the greatest challenge of education today. Some very significant insights about the science curriculum and the relationship of education to nature at the primary school level come from my interview with Kleo, a teacher at the UCPS, when she discusses the interplay between science with local ecology, but also climate science and political protest, where these issues were raised by the students.

"...like suddenly someone wanted to start an eco-council, somebody wanted to do posters put it round the school, there's been children in key stage one wanted to do a protest to do with climate change, so they were empowered to make like signs and go around the school and outside and chant and things so it's about empowering the children to make these decisions... in year 5-6 or so we're doing natural disasters so we're reading a book called flood lands...is all about how the sea levels have risen and you know it's all about survival in that sense but then we've used that as a springboard to talk about you know the COP 26 summit in Glasgow and things like that so it's using it cross-curriculary...'

In the above quotation, Kleo pertinently described the multiple ways the science curriculum can be re-politicised in the classroom, along with a sense of empowerment in students to direct their desires/aspirations. It also brings to the fore two different ways that children could learn to participate in civil society through a) self-organization and/or b) institutional interventions; in that case, through protest and the COP 26. As has been highlighted by multiple authors, the re-politicisation (Kahn, 2010; Kaufmann et al., 2019; Korsant, 2022) of education is a crucial component of ecological education and Kleo provides some practical examples of where this can be achieved in schools that are supportive of such expressions and needs. These practices could be considered as enablers of an ecological pedagogy in schools as they empower students to become active citizens; an approach which entails a sense of personal empowerment as well as promoting experiential learning opportunities. In this regard, Kleo explained how climate change is a topic that could transcend disciplinary boundaries and be taught in various learning spaces and could take many forms.

"...we don't just teach a lesson about climate change it's about oh don't forget to recycle your pen or don't forget to turn the lights off when you go out...so it's about those day-to-day practices, but then also sitting down and thinking right well we're reading a topic about rising sea levels so how this link to our topic or so how that link to our lives so it's about weaving it in throughout the curriculum and throughout everything they do at school and also about teaching it explicitly and going to the science of it as well...'

"...we've got a forest, so we'll often go out into the forest for other lessons. It's not just limited to forest school, we have an outdoor classroom which again is not just for specific outdoor related subjects, it's about a nice blend between teaching things explicitly so using the forest for a school, but also going out there, do a bit of mindfulness, so it's just a balance really' (Kleo, Teacher UCPS).

Here multiple teaching methods about climate change emerge, from indoor topic-based classes to outdoor mindfulness and the forest as a school. Although there are many different takes from Kleo's interview I would like to focus on the interplay between the multiple uses of the forest by the school, which takes us to the previous discussion about the utilitarian view of nature. Here the use of the forest could be described as utilitarian in the sense that it is used by humans as a resource for learning and relaxation. The difference from an extractive logic in Kleos's interview is that she talks about balance whilst 'using the forest for a school' could be seen as reflecting a relational approach to the world and being in the world. Such approaches stem from her ethics of care towards nature. Similar and inspiring were the interview data from the case of the 'Little Tree' school where the educators explain how their non-anthropocentric stance grew gradually in the school community, not as an imposed principle but through the practical use of the forest:

'Let's say for us as well this was a journey (the development of non-anthropocentric mindsets), when we first went out in the 'agros' and we started noticing some earthworms as we were digging. At first...we were talking to kids about what the earthworm provides the soil with and how this could help us with our gardening and how we can take care of these animals. Then we realised that this narrative about the earthworm isn't enough somehow, that these earthworms were there before us, they have their own lives, that they are not there to prepare the soil for our gardening....and then slowly we begun to talk differently about what these animals do there, how their lives are, we started doing some research in general, to learn about how do they live, about their communities, what do they eat and what their names are. So, for example, for the kids that they had the habit of killing the worms...and when the worms suddenly had their own names, Julius the earthworm, suddenly they started to become an entity, they weren't just the worms and the children started behaving very differently towards them' (Elley, LTS).

Expanding the relational, value-driven and spontaneous understanding of cultivating an ecological perspective in education through the relationship to nature, Eva from the case of the "School of Nature", emphasized the idea of valuing nature as an entity:

"...namely we go to nature in a protective manner not because we are truly in nature, but because nature serves us. We extent to another level of values where we go to nature taking her into account as an equal value...all these things out there exist as entities...values/entities with which I can converse, ask, feel feelings and respect through the relationship, I create relationship'.

All these empirical examples point to the non-static, synthetic/reciprocal, often haphazard way of an eco-logical understanding of organising education that was developed in Chapter 4. They point to the Guattarian viewpoint of processes of subjectification that free us from the constraints posed by modern scientific discourse. The way that this spontaneous subjectification through relationality emerges in Northern contexts of education is significant, where utilitarianism and disconnection are so widespread and thus largely common sense. Teaching science in the Northern context when taking into account climate change could become a matter for the ethics of care, mitigation and adaptation strategies and interdisciplinarity of different discourses, different actors and different knowledge. Schools have an important role to play in this, and to become sustainable, institutions should transform not just their curriculum but essentially their day-to-day practices, as noted by Guattari (1989) on the importance of the micropolitical, but also by Silvia (LTS):

It is very different to do a one-day, two-day...seminar for let's say recycling to fulfill curriculum requirements. I (the hypothetical teacher) don't have any connection or passion for the issue...it is different from being the natural flow of the school that the potato peels will go to the compost bin...I's a natural flow...we don't highlight it as something special that kids did...It's an integral part of the process.'

Here the power of mundane everyday practices is considered more important in changing our habits than central curriculum guidelines for example. Through these practices, our relationship to the material and immaterial world is galvanized, for example, our relationship to time, as recycling, repurposing and re-using are processes that demand a different, rather slower allocation of time spent in waste management when compared to the mainstream fast disposal of waste that reproduces the throwaway culture.

This takes us to the issue of materiality; as the kind of relationship, we have with the material world, which is another big theme in climate change and ecological education and the conceptual framework

I have chosen to elaborate on; that of degrowth and post-humanities (Quinn, 2013b; Taylor & Ivinson, 2013). The concept almost automatically appeared in every case of this study and in the extant literature. For example, and staying within the discourse of recycling but looking it from a degrowth/post-human perspective, recycling is considered a common-sense discursive practice in SD. It is about managing our litter efficiently but often questions around the necessity of producing that litter at the first place is omitted or silenced. The production of plastic waste, for example, and plastic as the predominant material of late modernity, remains greatly unchallenged and very much present in our daily lives. Materials and our relationship to the material world can reveal a great deal about how sustainability is taught and practiced in the interregnum of socio-economic conflicts (Eaton & Day, 2020). To this end, degrowth and post-human theories can elucidate how certain materials/products are not necessary in our lives and also how they deteriorate ecosystem balance. These theories could inform a more critical and ecological view of pedagogies for climate change mitigation.

"... for example year 3-4 did a topic about fashion last year, it was about sustainable fashion and it wasn't about you know what clothes looking good, it was all about you know the journey of a pair of jeans and you know how many gallons of water goes into making a pair of jeans, is that sustainable? what about the environment that is affected in countries like Nepal and the Philippines when factories for shops that we shop out here in the UK are churning out toxic waste into the rivers?...' (Kleo, UCPS, 2022).

The above reflection by Teacher Kleo at the UCPS highlights the complex and conflict-driven nature of environmental education. Conflict is considered by degrowth theory a constituent force of socioenvironmental politics (D'Alisa et al., 2015). As such, conflicting forces and interests should be a point for social democratic dialogue and politics of resistance to injustices. Materiality theories and innovative ways to elucidate socio-environmental injustices, like forensic architecture, are deemed crucial in this respect, when materials, social conflict and historical injustices are weaving complex relations between society, power and the environment. The following citation from Dona's interview (Whitworth Gallery) about the 'cancer alley' in Mississippi, America showcases this inherent conflict in socio-environmental politics, but also how introducing it through the arts can be a powerful way to voice socio-environmental injustices.

"...so not only have they systematically disregarded the families, the ancestors by building you know these horrible petrochemical companies, but they also worked out how the wind would come in and when gasses, which they could identify what they were and they were not particularly hazardous, you don't really want to inhale them but nevertheless on their own they weren't deemed as really toxic, but if the wind blew them in a certain direction, so that these separate chemicals in the air connected, they then became toxic and they worked out if you looked on the Mississippi there were places where it was less toxic, they were the white places, the places where there were more African Americans living were the really toxic places and there was evidence to suggest that ill health was based on the fact that they were getting from this toxic air from the petrochemicals..."

Here materiality elucidates the persisting and historic nature of socio-environmental injustices. But materiality is found in another branch of literature that is more personal and concerns the relationship to our body and the oftentimes disconnect from our own bodily experiences. The literature on embodiment stands for a form of knowledge that re-connects humans with their environments in a co-habiting relationship and not in a relationship of domination. This is a way of knowing with the body and experiencing an 'interrelatedness' with the environment. This type of knowing is also often described in the literature as "embodiment", "being-in-the-world", and "becoming worldly" (Freiler, 2008, p. 37). According to Freiler (2008), embodiment is a complex experience of 'learning through the body' that requires us to be open and pay attention to the signs our body gives us. Unfortunately, she notices that in the modern world, our connection to our bodies has become superficial.

Indeed, we live in a culture that bombards us with unrealistic body images and societal preoccupation with physical appearance and body consciousness. This certainly could account for why many of us have become disconnected from and inattentive to our bodies. Further, until we are faced with a health issue, from aging or illness for example, there is a tendency not to give it much attention (Freiler, 2008, p. 39).

A significant contribution to environmental pedagogies, embodiment and alternative modes of knowledge comes from Latin American Freirean ecopedagogical approaches to resisting practices in current Western-centered educational (Gadotti, 2011; Korsant, 2022; Misiaszek, 2020, 2021; Vanessa Andreotti, 2006). What these approaches have in common is their shared belief in critical and democratic values that might in turn nurture anti-colonial modes of being and a problem-posing rather than problem-solving sensibility of ESD. Among the most prominent scholars to have developed the concept of ecopedagogy are the Brazilian educators' Moacir Gadotti (1996, 2008) and Richard Kahn (Kahn, 2010), with their inspirational works on eco-sophic pedagogies, the pluriverse and planetary values. According to Kahn (2010):

For those of us working in education, we can take it as a first principle for the transition to ecological democracy, then, that such a world is a place in which scholars will take an interest in the natural world beyond its conscription as a resource for humanity. This includes rejecting the attempt to translate nature into a data resource for scientific measurement and management. Education will need to be more intimate and re-communed (Kahn, 2010, p. 57).

From the above quotation and my empirical research, there is a strong connection between ecological learning with thinking artistically, in the sense of reclaiming sensorial learning experiences and practices that transcend the modern scientific method and closed learning spaces or emergent practices of combining arts and climate science (Ahmed, 2013; Lights, 2019). This is evident in all the cases of the study, where each in different ways expresses the power of the arts to enunciate care, responsibility, and relation to the environment, in a different way than science discourse. It also matches Guattarian theory on the development of ethico-aesthetic paradigms, as processes that align with ecological care and the degrowth theory, as learning within a mentality of abundance/sufficiency and not scarcity. The below quotations from the all the cases reflect one or more aspects of these theories.

I think what I see most is that when you don't instrumentalize the arts as sort of within kind of a subject or curricular lines, you're creating something very discrete. You're learning how to paint in a skills-based space but when you actually take like the principles of being an artist of slowing down of noticing of asking questions I think that way of interacting and seeing the world differently can help bring into view and can help see your environment and landscape and your position within the world and a completely different way and you can

ask questions that might not have been asked otherwise and yeah I think it's just putting on a different lens...' (Moira, CCI, 2022).

"...and yeah I think that's something that draws very much from artists' philosophy that less is more... that actually from a place of... by working with what you have you enable creativity because you look at what you know the kind of material resources you have in front of you and that's where creativity and imagination and vision comes through, you know what can you do with what you already have' (Elsa, CCI, 2022).

'How can you create a relationship with something that you don't know...are we fooling ourselves? Children tend to forget what they have learned in schools...thus, when children learn within walls, without experiencing...what does descriptive brain mean? I experience with all my senses...I see, hear, fee, smell...I also create relationships...I relate...Then what we (humans) do? We enclose, a brain that is made to function descriptively, into a classroom, where it experiences abstractedly, and where it cannot conceive deeper concepts, such as system, change, evolution, which are macro-concepts that rule life and the human existence' (Eva, SoN, 2022).

'I would like to add that our pedagogy does not follow at all the market rules, namely we don't want to create humans that can adapt to this kind of economic framework...but humans that can cover their needs and to live in harmony with the environment without devouring it' (Sara, LTS, 2021).

'the whole gallery is kind of an ethos, in fact it is using art as a tool for positive social change and that's where that all comes from it ,you know, it's ,yeah, you coming to an art gallery but you're actually thinking about bigger things in some respects, it's not just community art picture, it's about how can we use this art to talk about things...' (Dona, WG, 2022).

"...do it now and at lunchtime that day they created a poster or write a letter and at that moment they had that idea and then they did actually change at that moment in time and I think that is one of the most important things because that's an attitude that needs to change... they felt really important, they've established a timetable ,you know...and children who are going out with the picket and things like that ,you know, the protests and prices and the eco-council, so many different things those children have been empowered to make that difference here and now in our community and hopefully they'll keep that with them and they can make that difference in the wider world as they grow up' (Kleo, UCPS, 2022).

8.2. A critical dialogue regarding the political ecology of education in the era of sustainable development

All in all, those who see SD as a potential for reform in schools argue that sustainability calls for innovation in education that can transform modernist mindsets, as well as our relationship to our surroundings to help us foster a planetary awareness (Gadotti, 2010b; Misiaszek, 2015; Rauch, 2002). Socio-ecological approaches to environmental education could be regarded as open-ended and bound

to local contexts rather universalizing practices, such as the education policy of the OECD, UNESCO and the World Bank, discussed in Chapter 2 (Rauch, 2002). As to the question of how to incorporate SD in the schools, Rauch (2002) argues that "it cannot be the task of educational institutions to teach specific patterns of behavior or to develop solutions to social problems..." (p. 48). Nonetheless, the way sustainability enters the school is characterized by opening the school to the world and to new forms of learning. As with the individual, at the institutional level there is also the need to re-connect institutions to society and the environment. He calls this process, drawing from the OECD's environmental education project - the "ecologisation of schools" - which "implies an opening of the school towards the outside world (development of new forms of teaching and learning, school development as a culture of communication, cooperation, conflict and decision-making" (Rauch, 2002, p. 49). It could be argued that this opening up would entail an involvement of the natural world in learning and being, thus the involvement of and re-connection with the non-human world. This in turn entails a whole new re-imagination of learning spaces and motifs. Old modes of learning and disconnection through closed spaces could be argued are acting as constraints for an eco-logical sensibility.

Re-connection could be argued at this point as the overarching emerging theme from theory and the interview data in both the individual processes of subjectification, but also at the institutional level of school's re-connection to other institutions, the environment, and local communities. This was revealed in the cases where schools and local organisations co-operate in socio-environmental projects, such as the case of the Whitworth Gallery, and the CCI. In both these cases, participants stressed the importance of partnerships and access to academic research and its connection to school practices and vice versa.

"... the changemakers it's taking place in primary schools and also secondary schools and the idea is that the school itself identifies the need and I guess it comes from the fact that we're a university gallery, so we have access to academics and cutting-edge research' (Dona, WG, 2022).

"... yeah and direct institutional links with researchers at the Faculty of Education, at Anglia Ruskin, at UCL etcetera um... and then in terms of how it kind of structures educational approach..." (Moira, CCI).

Indubitably, climate change discourse pushes institutions in the North to alter their modernist practices, and education is not the exception. In an ecopedagogical vein, Kahn (2010) problematises the history of humanitas, as historically related with modern unsustainable globalised capitalism, and suggests a reconceptualisation of ancient Greek 'paideia' to 'ecological paideia' to align with current socio-environmental frameworks. Thus, the concept of paideia cannot be seen outside major social transformations in SD era, reflecting community and self-sufficiency. Sufficiency is a buzzword used in degrowth to connotate a fundamental language shift from efficiency to sufficiency that could also alter the culture/management of education. Where sufficient means being enough, and implies a set of limits, efficiency aims at maximum productivity, and implies profitability with minimum cost. The difference is strikingly important for the political ecology of education (ibid, p. 40).

Paideia and humanitas have played significant roles in the advancement of human subjectivity, and to name an ecological paideia for planetary citizen- ship is to imagine another watershed moment in human subjectivity still. It is in this sense, then, that I would assert that we must come to a deeper under- standing of paideia' s role in the larger history of oppression - qua human subject - and that we recognize how it supported (in both its progressive and regressive forms) the dialectic of human culture in oppositional relation to nonhuman nature. While Athenian paideia inscribed an entire cultural and political community, it generally failed to further embed that community within the natural world in a sustainable fashion. This dualism then became heightened during the Hellenistic age, and it is fair to assert that it has since been the dominant sociopolitical narrative that human history is the emergence of a burgeoning class of people, most previously denied human status, who then become conferred as human and so deserving of rights (only in so much as there remains a class by which to juxtapose their emancipation against) (Kahn, 2010, p. 48).

From the above quotation in Kahn's influential work on the political ecology of education, a significant

point is made; the recognition of the interdependence of humans to nature through biological systems

that are necessary for the continuation of life and greatly excluded from the modern narrative. These

pose significant questions as to the role of education in an SD context, where interdependency is recognised, and as such a narrative shift is also deemed necessary. To start to unravel some of these critical questions I have examined the interplay of economy, ecology and human subjectivity in modernity and will now focus on the transformations that emerge form a sustainability and degrowth perspectives, or from a political economy to a political ecology.

One of the questions/themes that arise from the data collection and extant literature that connects to the first research question is the relation or effect the economy has on education and especially neoliberal economy to the way education subjectivities relate to the world and the transformation of these relationships in the political ecology of education framework. This is, of course, a complex relation and one that can be approached in many ways. Here I aim to utilize the theoretical concept of freedom and its different conceptualization in degrowth and neo-liberal theories. This way we can discern between two different approaches in relating to the world and which in turn impact on the educational.

In this regard, the recent analysis from Windeger & Spash (2022), has been enlightening. The authors pose the question of freedom regarding degrowth and how it differs from neoliberal conceptions of freedom, drawing from Castoriadis and neoclassical school of economic theorists, like Hayek and Friedman respectively. They argue that while neoliberalism offers an individualistic conception of freedom and it is market-based, the degrowth movement is latently connecting freedom to the concept of autonomy (Castoriadis, 1987), as a self-determination and self-limitation that is necessary for the institution of free societies, amongst them a degrowth society.

Hayek contests what he argues is the coercive power of the state. What could be argued, thus, is that Hayek's conception of freedom, as self-centered and uninterrupted by exogenous coercive powers, is not so far from Castoriadis' conception of freedom, as a process of self-organisation and non-coercion from heteronomous entities as prerequisites for free societies. One can only ask then, what makes these two approaches to freedom differ from each other?

Perhaps the answer is in the economy and its power to institute societies without it being accused of coercion as with other forms of social organising such as the State and political collectives. The latter is considered by neo-classical economic theory as illegitimate, as they are driven by human intent and prone to each individual's preferences, while the market is thought of as "impersonal and not intended by any human agent" (Windegger & Spash, 2022, p. 5).

Here the economy is considered by Hayek and Friedman as the primary space where freedom can be achieved. In this understanding, it is argued the markets should be left to expand uninterrupted, irrespective of possible structural inequalities they may create. Instead, competition is considered the necessary tool by which markets achieve equality, as competition is the mechanism through which choice is achieved, a fundamental aspect for the existence of liberty. Liberty then is the liberty to choose between several choices, and thus becomes primarily an "economic freedom" (ibid, p.6). There is, thus, in neoliberal theory the idea that the markets are the only institutions that can create a free society in the long run by creating the conditions for the development of competition and choice.

Taking it to Castoriadis' notion of freedom, he deems crucial for the individual and collective freedom the concept of autonomy. For him a society, as well as an individual, cannot be free unless it has achieved the conditions under which individual and societal autonomy are both operating simultaneously. Hence, perhaps the first most important difference between neoliberal and Castoriadian freedom is that the second places 'intersubjectivity' at the heart of the topic of freedom, as compared to neoliberalism's centralization of "methodological individualism" (ibid, p. 8). Castoriadis then also suggests that there is no autonomy or indeed freedom in absolute terms, as these are conditioned by the human psyche and historical structures that act upon the individual. Nonetheless, through practices of

...introspection, critical reflection and deliberation...an autonomous individual should aim to attain an active relationship to, and engagement with, their own psyche and societal influences, while accepting they are unable to fully control them (ibid, p.8).

These practices are thought of by Castoriadis as crucial for the development of democratic societies that can institute their own rules of government. However, these rules and modes of government are considered open to criticism and interrogation and thus are not fixed or permanent but rather flexible, human-made and contingent. This is perhaps another difference that we can observe in comparison to the neoliberal economic conceptualization of freedom as absolute and controllable through market mechanisms with a high degree of control mechanisms.

Putting these two concepts of freedom in relation to degrowth and ecological discourses, it becomes clear how Castoriadis's concept has been used by these theories as opposed to neoliberalism, as the latter produces a consumerist society. Freedom, as within the autonomous society theoretical framework is rather desirable by degrowth as it posits the issue of self-limitation as a collective, non-imposed, though, mode of being.

Ultimately, freedom in a degrowth society, in the Castoriadian sense, implies mindfulness, criticality and reflective thought in a life of self-determination within self-governing social communities (Windegger & Spash, 2022, p. 10).

Both these theories pose different forms of government in a political vein and different ways of managing life. Olssen and Peters (2005) explicate this when they regard neo-liberalism through a Foucauldian lens which sees it as a disciplinary technology, a form of technology with concrete functionality to answer to particular historical problems, and especially that of individual freedom and government. In this sense, control and power do not always hold a negative presupposition to their

core existence but are rather societal constructs that exert political rationality and more specifically they are:

...not simply an ideology but a worked-out discourse containing theories and ideas that emerge in response to concrete problems within a determinate historical period. For Foucault, like Weber, political reason constituted a form of disciplinary power containing forms and systems of expertise and technology utilizable for the purposes of political control. Liberalism, rather than being the discovery of freedom as a natural condition, is thus a prescription for rule, which becomes both the ethos and techne of government (Olssen & Peters, 2005, p. 315).

This takes us to the problem of sustainable futures and government. However, this is not the work of this thesis. Taking it, though, to education and the idea of ecopedagogy, redirecting the framework from a political economy of education to the political ecology of education could bring new insights into how can education be transformed in the SD era, when the recognition of limits to economic expansion in relation to nature is rethought (Fraser, 2021; Green, 2022; Kahn, 2010; Kaufmann et al., 2019; Lloro-Bidart, 2015; Meek, 2014). (RQ1). These approaches to ecological education are "…bringing into focus the often messy scalar relations between politics, economy, education, and ecology" (Meek, 2014, p. 256).

In this regard, the degrowth framework can be applied to education in transformative ways to strengthen self-sufficiency, autonomy, conviviality, ecology and other basic components of a sustainable society that neo-liberal government has failed to deliver. For example, Kaufmann et al., (2019) discusses the possibility of a pedagogy of degrowth, "...as one path within a complex search for ways to imagine and support sustainable futures, which address root causes of the current crises" (p. 931). They maintain that for education to be conducive to sustainable futures, there needs to be "a politicization" of education through "a critical-emancipatory perspective" (p. 932). In addition, they assign to their degrowth perspective of education a psychological role, in the sense that the educational field bears the potential "...to strengthen certain psychological resources that would enable individuals

to perceive sustainable futures and the processes towards attaining them not as threatening or unreachable, but rather as something desirable and achievable" (Kaufmann et al., 2019, p. 933). This is pertinent to a degrowth strategy, as its basic tenant is to challenge what appear as unquestioned mental infrastructures that modernity, including schooling, has established as truths, with the most common one the desirability of infinite economic growth (D'Alisa et al., 2015; Welzer, 2011).

The culture of optimisation, competition, hyper-individualism, dualism, and so on, need to be confronted in a degrowth pedagogy. Sadly, modern schooling has legitimised this mode of being for centuries and this is perhaps one of the main challenges this institution must confront to become a sustainable institution conducive of ecological learning and capable of effectively responding to the challenges climate change poses to humanity. Modern education has been complicit in the perpetuation of exploitative relations in two ways according to Kaufmann et al. (2019), who refer to "the reproduction of a problematic economic paradigm in education and the instrumental understanding of ESD" (p. 934). The first has been discussed at length in this thesis. The second, refers to an understanding of sustainability through pre-determined rational thinking which supports technological fixes and sees the environment as a mere resource. The authors then counter-suggest a psychological role of degrowth in current socio-ecological crises that "can aid in one's ability to perceive sustainable futures as something positive and shapeable, and thereby encouraging people to envisage effective societal change" (Kaufmann et al., 2019, p. 935). They highlight the empowering role degrowth can play in the development of "the capability to enjoy, self-acceptance, self-efficacy as well as mindfulness, the quest for meaning and solidarity" (Hunecke 2013, cited in (Kaufmann et al., 2019, p. 935). To this end, the authors suggest degrowth as a strategy in education that can enhance education's transformative side in various ways.

It could be argued at this point that a degrowth pedagogy could inform a transformation from rationality to relationality; in shott a shift in the modernist mindset that is catastrophic for ecosystems and social systems together. Nonetheless, the authors highlight that all applications refer to informal educational settings, and that to start practicing degrowth pedagogies in schools and universities will require them to 'identify windows of opportunities' and 'entry points' where such practices could be developed. Drawing from my empirical work within the cases, some of the entry points could be (i) climate change education in curriculum, (ii) every-day degrowth practices in schools and (iii) developing convivial relationships with other educational institutions based on shared interests. A degrowth pedagogy could be included in all these aspects of (un)learning and doing things differently, spontaneously, synergistically, and convivially. By performing and experiencing the bigger social changes we would like to see at the micro-level, we empower ourselves to create the space for a plethora of positive social transformations to emerge that cannot be measured or prefigured yet.

However, as we have seen in Chapter 2 in the discursive analysis of three major development institutions, UNESCO, OECD and the World Bank, they adopt the SDG's framework, but without a wholesale discursive shift toward contracting or degrowing the economy. Rather a renewed optimism to the economic growth model has been observed through the notion of sustainability coupled with "technological enframings" (Irwin, 2017, p. 380) of environmental problems and the knowledge economy notion of development that continues to put its faith into techno-scientific growth (Robertson, 2005).

Notwithstanding the importance of technological innovations in combating climate change, an ecopedagogy could facilitate deep behavioral changes that can transform socio-environmental relations. In that work on ecopedagogy and ecolinguistics is enlightening (Gadotti, 2008, 2010a; Misiaszek, 2015, 2020, 2021). According to them, the basic quality that distinguishes an ecopedagogy

from other forms of Environmental Education and Education for Sustainable Development is its critical approach that involves transformative and action-oriented teaching/learning. This is basically to say that it has at its core diagnosis and analysis of environmental problems the recognition of structural inequalities that lead to the former and as its tactic to induce changes that can benefit whole ecological systems (Misiaszek, 2015). Since according to Misiaszek (2015) "...socio-environmental issues are transcending physical distances", ecopedagogy is then "only possible if one learns about socio-environmental perspectives and traditions that are different from our own" (p. 282). These may entail decolonisation, feminist theories or degrowth and other alternative economic theories.

Overall, and returning to the research questions, the institution of education in late modernity and in between SD and economic growth is a complex, multivariable and conflict-driven discourse. This makes the fostering of sustainability values in education a challenging, yet innovative, pathway for transformations, which may come out form a variety of late modern discourses, such as neoliberalism and degrowth. This is due to the open-ended way sustainability politics are thought of and its use by various actors. No matter how sustainability politics enter education, it has been shown in this thesis through empirical research that ecological education is a way to foster creativity in education and repoliticisation, a theme that emerged both in theory and the data.

8.3. Methodological reflections, ethical considerations, limitations and policy implications.

Methodologically, through the discursive entanglements of economic growth, green growth, technoscience and de-growth in education discourse, I have tried in this thesis to show the multiple forms and networked positions of ecological education in two specific contexts – England and Greece, as well as in the framing of education and sustainability by the multilateral organisations. Having informed my study from critical Foucauldian discourse analysis and post-human theory of

development I have tried to bring to the fore the multivariate and complex networked components in doing environmental education, as its content is always dependent upon individual actors and institutions, on the one hand, but also the non-human world, each giving different nuances to it, on the other. Thus, a dialogue between the framework of degrowth and post-human theories is highlighted methodologically, if we are to challenge deep-rooted discourses/practices that prolong socio-environmental problems. The list is non-exhaustive - from technological interventions, smart cities and neo-liberal education to ecological, place-based and de-growth performativities. In these entanglements of hybridization, acts of combination, addition, transformation and/or imitation may appear, sometimes straightening controversy and creating rival discourses, i.e., de-growth-economic growth, while sometimes may reconcile different elements to their practice i.e., technology, ecology, and arts. For example, the incorporation of two arts organisations in the empirical research came after arts and ecology were frequently appearing in the theory/data and were added following a "chain evidence" (Yin, 1981). This methodology reflects the theoretical concepts of emergencies and contingencies, as in each stage of the research new components may appear or others subside.

Thus, notwithstanding the critical viewpoint care encourages us to think of vested interests and marketisation of and in education, it is worth inquiring into the possibilities that can co-create educational spaces with environmental caring practices at their heart, without drawing a priori assumptions about their ideological destination, a research stance that served the Foucauldian discursive practice framework. The inquiry into educational entanglements, from de-growth vocabulary to new technologies to biocentric perspectives is the strategic position that acknowledges the hybridity in human-non-human-machine interactions and looks at how they can be reconciled in an ecological framework and/or how they collide, which is an area that further research is needed. A degrowth pedagogy could inform a renewed knowledge in educational practice and modes of being in the North in the context of living within ecological limits when combined with other theoretical

frameworks, such as the post-humanities and post-carbon science, which is another area where more research could be beneficial in informing climate mitigation/adaptation relevant pedagogies.

Following this, my analysis of the complex, contradictory and (dis)continuous forms that environmental pedagogies can take has highlighted the importance of open-ended, place-based and ethico-aesthetical paradigms in education, as well as the hybridity in methodology and theoretical frameworks.

This takes us to the limitations of this study. First, the importance of technology in the modern world and in late modern education and the relationship between technology, education and ecology is highlighted by post-human theories. Unfortunately, the constraints of time and length of the thesis did not allow for a more in-depth analysis of the issue, which is a topic worthy of further research. Second, degrowth and education is an under-researched field, and does not allow for general conclusions to be drawn as it hasn't been implemented as a policy in any of these counties. Third, it could be beneficial to better understand how ecopedagogies and practices of degrowth are performed in schools, to conduct school observations. Unfortunately, that was not possible due to the impact of the Covid-19 pandemic to the empirical research and to subsequent time and access limitations. Lastly, as has been shown by the case of the WG, environmental education is a conflict driven field and one that should also be explored through the lens of socio-environmental justice. Thus, it is deemed pertinent to mention that future research on the topic should incorporate vulnerable communities, stricken by environmental conflicts, a topic that this thesis touched epidermically.

Considering policy implications, the overarching themes that were observed is the need to find ways to challenge dominant rationality discourse in education and the science curriculum, accommodated through arts/science interdisciplinary education and spontaneous projects, the need to reconsider human-non-human relations and the need to altogether adopt transformative learning experiences. Although degrowth may not have been explicitly stated in all these projects, courses or modules of learning, conceptions of slowing down, being critical and challenging dominant systemic norms have continuously emerged in the data. A degrowth pedagogy thus is/could be incorporated within various attempts to transform education in the North, something that is becoming more and more relevant within the climate crisis context. This can start form policy implementation of ecological/degrowth learning from primary level, where student's attitudes towards the environment begin to construct and where also parental education towards ecology could be differentiated, if some systemic limitations were to be challenged. Including ecological learning pedagogies in education policy and in curriculum are tangible policy acts that could inform an education for sustainability and climate change and especially help empower communities through such educational programmes.

8.4. Researcher's positionality

This research project was developed by myself as a researcher inspired first, by my experience in education in Greece, Africa and the UK, and second, by my academic interests which have revolved around emancipatory politics and critical thinking. Having studied for my first degree in Education at the Aristotle University of Thessaloniki at a moment in Greek modern history characterised by multiple political upheavals, has undoubtedly shaped my academic thinking.

While I was studying in Greece between 2008-2013, Alexandros Grigoropoulos, a teenager, was murdered by a policeman in the area of Exarcheia in Athens. This precipitated an uprising of mostly the younger population in the whole country. For months, major cities in Greece were filled with the anger and grief for the death of the innocent teenager and protests were launched against both the Greek police forces, as well as the whole political system. In 2012, the then Greek Prime Minister, announced that Greece was entering a period of economic crisis and that would be under Special
Adjustment Programmes (SAPs), operated by the IMF and European Commission. People in Greece reacted to these agreements very negatively, as for a couple of years millions were protesting against SAPs.

This is when I first interacted with some of the ideas around degrowth, during economic crisis-stricken Greece. This event later came to spark my interest even further, not only as a proposal for reconstructing economies undergoing an economic crisis, but also as a more than economic, ecological and climate change powered political and pedagogical proposal.

My interest in studying pedagogies around sustainable development and degrowth politics was further developed later when I worked for a year in Congo Africa as a Headteacher and then later while I was doing my masters in Bristol, UK, in Education, Policy and International Development. In Africa, I witnessed the gaps in development in comparison to the Global North and saw a country so rich in many ways (especially ecologically rich) yet so poor in ways that diminish the human subject and reproduce global inequalities. My masters in Bristol came after having seen and experienced Africa's condition and inspired me to pursue a PhD around the themes of education, climate change, sustainability and socio-environmental justice.

The positions and line of thinking in this thesis are a result of my experiences with development and education in three different countries and draw largely from a critical thinking perspective. They are also a work in progress, as my own thinking as a researcher, educator and academic has and is, evolving, changing, expanding and ultimately transforming, in unexpected ways following the everchanging movement of our modern world. Nonetheless, my positions and research data have been largely shaped by emancipatory international politics discourses and my personal experience, which then as a researcher have tried to negotiate within the neoliberal university. In this respect, this thesis and the way the data are presented reflect the desire for changes in education, while maintain a

hopeful and practical stance towards the necessity for a more profound transformation at the educational/ecological filed.

8.5. Final reflection

Pursuing a PhD in the field of education and climate change politics has been a challenging task, due to the conflict-driven and fast-emerging character of the topic. In that, as a researcher I often found myself torn between different positionalities and social realities and found out in practice what 'contradictory subjectivities' mean. As a modern subject, inhabiting this world, I came to the realization that sustainability and environmental politics constantly generate such contradictions in modern subjectivities, which often lead to a feeling of disappointment and/or powerlessness, especially when climate change effects are already felt in most areas of the world.

However, these feelings were almost immediately subsiding when faced with action, either in the form of collective or individual acts of care, sharing ideas, communicating problematizations, listening to others' opinions, and so on. This sense of togetherness and empowerment through communities, an overarching topic in degrowth theory - it could be argued - is essential for sustainable and pro-ecological societies to exist. As has been shown, critics of the neo-liberal and economic growth model argue that such convivial societal characteristics are under attack and extinction in late modernity, a problem that could have significant impact on whole ecosystems. As economic growth was developed as a set of discursive practices and a government technique in a particular point in time, so does climate change, which poses different problems for government and asks for transformations in discursive practices.

In this regard, the conceptualization of limits has been significant in this thesis, as has been shown through the juxtaposition between a neo-liberal limitless conception of freedom as production/consumption and a Castoriadian/degrowth conception of limits as the balancing act between social and individual autonomy and freedom, as not an absolute thing but co-constitutive of the self and of societal institutions. Of importance is also a post-human reflection that can facilitate the transformation of anthropocentric values in education and the extension of the freedom discourse to other non-human entities/forces. These approaches to freedom pose two different ways to look at reality and social phenomena, from the economy to education and ecology and pose different government paradigms that could possibly co-exist in a modern complex world. Having said this, and having come to terms with these modern contradictions, it is then a matter of having the freedom of choice to co-create with others and along the non-human sustainable communities, necessary for the continuation of life, which is always a process of creating and not a destination.

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APPENDIX 1- Information Sheet for Participants

University of Cambridge

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Research Project: "A multiple case study of pedagogies for ecological transformations: from growth patterns to degrowth and ecological policies/practices in education."

Research participant information sheet

My name is Anna Kliampa, and I am a research student at the Faculty of Education, University of Cambridge. I am writing to kindly ask you to take part in an online interview about the content, methods and aims of environmental pedagogies in your school/organization. Below, there is the main purpose and content of the research with some detail, as well as information for the collection and dissemination of the data that will be drawn.

This project that roughly stretches across a 9-month empirical research period, will involve the observation and register of pedagogical activities that are referring to or are adjacent to environmental and ecological issues. The collection of data will be conducted through online interviews of relevant practitioners (teachers, principals, project managers etc.) and web search of your organization's site or publicly available material. The aim of the interview is to talk about the history of your organisation, ecological pedagogies and forms of giving feedback to your students. In case you would like to keep your institution's name anonymous, anonymity will be granted. The research's methodology could be placed on the wider field of qualitative and interpretive methodologies that emphasize the participant's views, attitudes and experiences and in doing so they prioritize the depth of the findings and not the breadth, as it will be the case with the dissemination of questionnaires. For that, it is desirable the interview to be conversational and convivial.

The aim of the research is to explore ecological paradigms in education that they place ecosystems' balance and sustainability at the heart of their educational programme. Aiming at embodying an environmentally and socially sustainable school and drawing theoretically from the socioeconomic theory of degrowth, I will look at the ways in which climate change discourse contributes to relevant pedagogical interventions. To be more explicit, I aspire to explore how close this theory may be to some ecological practice in education in order to bring about positive change in how we deal with environmental and social issues.

The University of Cambridge has strict ethical procedures on conducting ethical research with teachers and young people, consistent with current British Educational Research Association guidelines. For a more detailed discussion on Research Ethics visit: <u>http://bit.ly/BERAethics2018</u>.

Interviews will be conducted online via skype or zoom (except for the participants requesting another platform). Interview recordings are confidential, and participation is voluntary. In subsequent use of the recorded material and before the interview you will be asked if you agree for the formal name of your institution to be used in the presentation of the data. In case you disagree, anonymity will be granted. The recorded files will be archived and transcribed. All recorded data will be stored in a locked room or a locked computer, and only my supervisor and I will be allowed to review the recorded data. In addition, you can have access to the transcribed data, review them and make any amendments you deem necessary before the analysis phase.

This research does not involve any risks or discomfort for you and your students other than being audio-recorded during the interviews. Having taken the Covid-19 pandemic under consideration, the health and safety of the participants are deemed invaluable and so matters concerning withdrawal will be faced with utmost flexibility and understanding. The benefit in participating in this research may not be immediately felt, but it has long-term wider social and environmental benefits. It could also help you reflect on your practice or provide opportunities for you to contribute to the field of ecological alternatives and sustainability networks in education in a time that well-being practices are a universal priority.

With your permission, I will use the recordings and the transcripts only for training and research purposes, and subsequent publications. The University of Cambridge is committed to the dissemination of its research for the benefit of society and the economy and, in support of this commitment, has established an online archive of research materials. This archive includes digital copies of journal papers successfully submitted as part of a University of Cambridge postgraduate degree programme. Holding the archive online gives easy access for researchers to the full text of freely available theses, thereby increasing the likely impact and use of that

research. If you agree to participate in this study, the research will be written up as a journal article. The journal article will be published open access.

This study has been reviewed by the University of Cambridge Faculty of Education Research Ethics Committee and has received ethics clearance.

If you have any further questions, please feel free to contact me at [Email address redacted] or my supervisor, Professor [name redacted] [Email address redacted].

Thank you for your time and attention. I look forward to hearing from you.

Yours sincerely,

[name redacted]

APPENDIX 2- Informed Consent Sample

University of Cambridge

Faculty of Education 184 Hills Rd, Cambridge CB2 8PQ Tel: +44(0) 01223 767600 [Email address redacted]



Interviewee consent form

Project Title: "A multiple case study of pedagogies for environmental sustainability: from growth patterns to degrowth and ecological policies in education."

I, the undersigned, have read and understood the participant information sheet about the study and have had the opportunity to ask questions and get satisfactory answers about the study. I understand that I have the right to withdraw from the study without giving any reason and without any consequences before the **31/02/2023**. I also understand who will have access to information provided and what will happen to the data at the end of the study. I am aware that this study has been reviewed by and received ethics clearance through the University of Cambridge Faculty of Education Research Ethics Committee. If need be, I can find out more about this research study by contacting the researcher [Email address redacted] or her supervisor at the department Professor [name redacted] [Email redacted].

Fully informed of my rights, I agree to participate in the study, carried out by Anna Kliampa, a fulltime PhD student at the Faculty of Education, University of Cambridge.

Name of School Principal/ teacher/manager:

Signature: _____

Date:

APPENDIX 3- List of Interviews

	Name of	Country	Interviewee's	Type of	Interviewee's	Location/date
	Organisation		role	Organisation	pseudonyms	
Int#1	The Little Tree	Greece	Early years	Self/managed early	1. Sara	Zoom/12/01/2021
	School (LTS)		educators (3)	years education	2. Silvia	
				initiative	3. Elly	
Int#2	School Of Nature	Greece	School	Private early year's	Eva	Zoom 22/03/2021
			Principal	school		
Int#3	University of	England	Primary	Free School/State	Kleo	Zoom 17/11/2021
	Cambridge		School	funded		
	Primary School		Teacher			
Int#4	The Whitworth	England	Programme	Gallery	Dona	Zoom 27/01/2022
	Gallery		administrator			
Int#5	Cambridge	England	Programme	Charity	1. Elsa	Zoom 22/11/2022
	Curiosity and		administrator		2. Moira	
	Imagination		and assistant			

APPENDIX 4- Topic guide for interviews

Topic Guide for "Ecological Alternatives in Education"

Introductory comments

Thank you so much for taking the time for the interview/ As we have already discussed, I would like to learn from your pedagogical activities that promote sustainability in your school/organization (from practical to artistic workshop etc.)/ The interview will take between 30 to 40 minutes and is **semi-structured**, which means that I have some topics that I would like to talk about, but we do not have to strictly follow them; the interview will be more like an informal conversation./If you do not want to answer a question I asked, just let me know/I will be doing my best to be sensitive and to respect your boundaries/Would you like me to use the name of your organisation and yours? Do you have any questions before we start?/Can I now switch on the digital recorder, so that we can begin the interview?

Introductory question

So, tell me a bit more about yourself:

- > What is your role in Little Tree or any other school?
- How did you decided to get involved in ecological education? Have there been any specific experiences that influenced your willingness to participate in ecological education?
- What is the main purpose of your pedagogy?

Histories, pedagogy, assessment

- > Could you give me a brief history of your institution?
- In your opinion, what are the incentives and aspirations of ecological education. Is the acknowledgment of the existence of environmental limits an important ecological lesson?
- Have you heard of the proposal of degrowth policies, (which calls developed nations to downsize the economy as a response to mitigate climate change)? If yes, what are your thoughts on degrowth, and could you imagine it playing some role in education?
- How would you describe the practices of an ecological education? (pedagogies, content) Could you give examples?
- Does an ecological practice in education entail or should it entail the coming together of human-animal and machines? And what are the relations of these entities in your school?
- Is connection to physical natural space a prerequisite for ecological learning or any environment (i.e. urban spaces with no green spaces) could cultivate ecological awareness?
- What is the time (rhythms) of the ecological learning/pedagogies in your school? (Is it slow? Fast? Time consuming? Connected to seasons?)
- What about the assessment/feedback of these practices? How are they assessed in your institution? Are they assessed by actors outside the school? In what ways? (criteria, framework)

Spaces/things-context/arts-aesthetics

- At which spaces (public/private school, outdoors, university, home etc) do you feel ecological knowledge is facilitated and where do you feel more comfortable learning/teaching?
- > What is it about these spaces that you think they promote ecological learning?
- Are there any specific or important objects that facilitate ecological learning? (natural, machines, ordinary?)
- What role, if any, do you think discovery, joyful play, free time and artistic expression can play in applying ecological pedagogy in education?
- > Which one, the cognitive or the affective side of learning is more present in the curriculum?
- > What is the role of arts in your environmental activities?
- > What is the role of non-Western, informal and/or local knowledges in your pedagogy?
- What kind of skills and attitudes towards ecological sustainability you aim to nurture through your activities?

Final questions

- What made you participate?
- > Are there any other observations/comments you would like to make?

Thank you so much for this talk and your trust! (Say how it was for me...)/I will send you the interview transcript so you can read it through and change information if necessary/ Feel free also to withdraw from the research before the date mentioned on the informed consent, if you change your mind about the dissemination of this interview.

APPENDIX 5- Example of quotes translation

Original	Translation
Προσεγγίζουμε αυτά τα ζώα και δίνουμε και το παράδειγμα και στα παιδιά, με εναν όχι ανθρωποκεντρικό τρόπο, δηλαδή δεν τα βλέπουμε ως όντα τα οποία είναι εκεί για να ικανοποιούν τις δικές μας ανάγκες, αλλά ότι ζούμε μαζί και μοιραζόμαστε ένα χώρο και κάποιες πηγές ας πούμε. Την ίδια στιγμή είχαμε και το περιβόλλι, το οποίο το καλλιεργούσαμε αλλά είχαμε και κομμάτι του Αγρού το οποίο ήταν ακαλλιέργητο και το αφήναμε να εξελλίσετε ας πούμενα αναπτύσσονται τα φυτά, οι κάμπιες κι αυτά.	We approach these animals, and we also educate the kids in a non-anthropocentric way, namely we don't see them as entities that are there to satisfy our own needs, but that we live together and we share this space and some resources, let's say. At the same time, we had our garden that we grew, and we had a piece of the backyard that was left un-cultivated, and left to developfor the wildflowers, caterpillars to develop and so on. (Int#1:206)
Αν καταλάβω μέσα από τη φύση την έννοια του συστήματος, καταλαβαίνω τον εαυτό μου ως σύστημα, σώμα-ψυχή-πνεύμα, τα οποία θα πρέπει να συνεργάζομται για να είναι καλά το σύστημα, να υπάρχει αρμονία. Η φύση τι μας διδάσκει; Αρμονία-ισσοροπίαμετα καταλαβαίνω ότι κάτι δικό μου επηρεάζει τον άλλον και να καταλαβαίνω μετά ως κοινωνία ότι η δική μου συμπεριφορά επηρεάζει την κοινωνία και ότι εγώ επηρεάζω την κοινωνία άρα να επιλέγω και την συμπεριφορά μου μέσα στην κοινωνία και την κοινωνία μέσα στην οποία θα αναπτύσσομαι και όχι θα μένω οπουδήποτε και θα θεωρώ ότι αυτό δεν με αφορά, με αφορά, με επηρεάζει.	If I understand through nature the concept of a system, I understand myself as a system, body-psych-spirit, which should co-operate for the system to function properly, for harmony to exist. What does nature teach us? Harmony- balancethen I understand that something personal affects the other and that society affects behaviour and that in turn I affect society, so I choose my behaviour in society and the society in which I am developing, and I am not going to stay anywhere thinking that is doesn't concern me, it does concern me, it affects me. (Inr#2:212)

APPENDIX 6- Key Stages in England's Education System

Key Stages in UK according to the Department of Education.

Key Stage 1: Years 1 and 2, taught to children between the ages of 5-7.

Key Stage 2: Years 3 to 6, taught to children between the ages of 7-11.

Key Stage 3: Years 7 to 9, taught to children between the ages of 11-14 (secondary education).

Key stage 4: Years 10 to 11, taught to children between the ages of 14 to 16 (final year, GCSEs exam).

Key Stage 5: Years 12 to 13, taught to children between the ages of 16 to 18 (A-levels or other vocational training).

APPENDIX 7- Curriculum subjects for Key Stage 1 and 2



• <u>religious education (RE)</u> - but parents can ask for their children to be taken out of the whole lesson or part of it