

## ARTICLE

# Education through smoke and ash: thinking without method and the argument for a post-growth education

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## Abstract

This paper speculates as to the material consequences of the ecological crisis for the current objectives of the education system in the State of Victoria. Drawing upon new materialist thought, it presents a post-qualitative inquiry into the lead author's experiences as an educator during a 2014 fire event in the Latrobe Valley region of Gippsland, Victoria, Australia, known as the Hazelwood Coal Mine Fire. By engaging in thinking without method it unfolds an argument that a political preference for certain theories has resulted in economic growth becoming a key objective of Victoria's education system. It explores alternative theoretical perspectives, including the theory that there are limits to growth. This theoretical shift implies that any meaningful response to the ecological crisis will require a transition to a post-growth society. The paper considers the implication of this alternative theory for the current objectives of the education system in the State of Victoria. In so doing, it considers what it might mean if we accepted our response-ability to educate for a post-growth society rather than for a society surrounded by smoke and ash.

**Keywords:** education; policy; economics; sustainability; post-qualitative; post-growth

## Introduction: education through the ecological crisis

There is no longer any doubt that the observed increases in greenhouse gas (GHG) emissions since 1750 are a consequence of human activities, and that this has warmed the climate at a rate that is unprecedented over millennia (Intergovernmental Panel on Climate Change [IPCC], 2021). Consequently, unless deep reductions in anthropogenic GHG emissions occur in the coming years, the planet will exceed 1.5°C and 2°C of warming this century, and the climate will shift away from the narrow climatic niche in which human societies have evolved over the last six thousand years (IPCC, 2021, 2022a). In fact, without a strengthening of current climate policies median global warming is projected to reach 3.2°C by 2100 (IPCC, 2022b).

Each additional increment of warming will bring clearly discernible increases in the intensity and frequency of heatwaves, droughts, bushfire activities, sea level rise, heavy precipitation events, ecosystem degradation and biodiversity loss (IPCC, 2022a). A warming planet will challenge the capacity of humans to inhabit several regions of the world, impact cities and settlements, create a need for mass migration, increase the risk of food and water insecurity, of ill health and premature deaths, and the tensions that contribute to civil unrest and armed conflict (IPCC, 2022a).

In addition, human activities now also contribute to the fact that more species are threatened with extinction now than ever before (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services [IPBES], 2019). Compared to the average over the past 10 million years,

the current global rate of species extinction is tens to hundreds of times higher (IPBES, 2019). Therefore, unless we also address the human drivers of biodiversity loss, it is estimated that around 1 million species will soon face extinction (IPBES, 2019).

In this paper we explore the material consequences of this ecological crisis in regards to the current objectives of the education system in the State of Victoria, specifically its disposition to increase economic growth. Drawing upon new materialist theory we inquire into, re-visit and re-feel the material consequences of a 2014 fire event on the traditional lands of the Gunaikurnai, in the Latrobe Valley region of Gippsland, Victoria, Australia, known as the Hazelwood Coal Mine Fire.

We elaborate how the lead author's (White) experiences as an educator at a local primary school during this event caused him to pose new questions about the objectives of education in an era marked by ecological crisis. We discuss how a preference for certain theories about the relationship between education and economic growth has contributed to the Victorian Government making the pursuit of economic growth a key objective for the state's education system. We then engage with alternative theoretical perspectives to question the appropriateness of this educational objective during an ecological crisis. In so doing, we engage with theories which suggest that there are material limits to economic growth. Indeed, we point to empirical evidence that supports the idea that we are rapidly approaching the limits to growth on our planet. This implies that continuous economic growth is incompatible with a sustainable resolution to the ecological crisis. Consequently, we argue that any meaningful response to the ecological crisis will require a transition to a mode of social provisioning that does not depend upon the objective of economic growth.

We argue that the Hazelwood Coal Mine Fire reveals that it is time to speculate on the role of education in a world beyond growth, instead of continuing to view education as an instrument for realising infinite economic growth on a finite planet. Consequently, we suggest that education might be re-thought to support the realisation of a post-growth society. In so doing, we might enable a more sustainable and prosperous future not just for the children situated in such events as recounted below, but for all the young people of the planet, and the planet itself.

### Thinking without method

New materialist thinking articulates that data is never simply there for researchers to find and report on, but rather research findings come to exist selectively and depend upon the research parameters used. As ontologically invested scholars, we feel-think these experiences and ultimately write these thoughts into existence (Wolfe, 2021). Thus, knowledge emerges onto-epistemologically within a specific place and time. Due to this framing new materialist scholars insist on the importance of outlining the instruments of measurement employed to create data. The research instruments must account for 'the agencies of observation' (Barad, 2007, p. 309) and, the researcher concede, that 'result, method, measurement, description, interpretation, epistemology, and ontology are not separable considerations' (Barad, 2007, p. 121). Researchers are not on the outside looking in, they emerge entangled with their research findings in situ (Haraway, 1988), where 'the specificity of entanglements is everything' (Barad, 2007, p. 74). The researcher feeling-thinking emerges with ontological experience in relation with place; with land; with communities and social histories; with schools and systems; with economies and with ecosystems. We openly confess that the research outcomes presented here are only possible through thinking formed with the ontological experience and affective lived investment with the place known as 'the Valley'. Accordingly, it is important and appropriate to disclose the researchers' experiences and entanglements with the Valley.

White's family history incorporates numerous stories of working-class white people migrating to the Valley in search of better economic opportunities. He commenced his formal education at

the public primary school in the small town of Tyers, amongst the foothills of the Baw Baw Ranges. His family encouraged his early interest in literacy and numeracy, and he quickly discovered that school was a place that also rewarded these interests. Following the privatisation of the State Electricity Commission of Victoria, the Valley came to have one of the highest unemployment levels in Victoria for two decades, peaking at 18.6% in 2006 (Wright, Valenzuela, & Chotikapanich, 2015). Attending the nearest public secondary college in Traralgon during this era, White struggled to accept the idea that the local economic conditions meant that his education should be designed to guide him towards the acquisition of knowledge and skills that were favoured by local employers. He remembers the growing number of heatwaves, droughts and megafires that were occurring at the same time, including the blood red sky and thick ash rain that blanketed the Valley during the Black Saturday bushfires of 2009. As a teacher, with a young family, in the small town of Trafalgar his research explores the interrelationships between these experiences to better comprehend how education might help secure a desirable ecological and economic future for the Valley.

Wolfe's biography demonstrates not just her investment in conceptualising otherwise but demonstrates the impact of the ecological crisis as a material reality. She is a white (settler descendent) cisgender woman (born on Gunaikurnai land) with long-standing family ties to the Valley. She, as a Valley child, attended a two-roomed primary school (long removed to make way for the Loy Yang Power station) alongside her many cousins. The small school yard was hemmed on one side by a pine forest (planted by the dominant industry at the time, Australian Paper Mills) and a tiny church on the other. That was all there was on that country road to nowhere. She remembers breathing the deliciously crisp damp air as she stomped in gumboots through the perpetually damp farmlands of her childhood. Her parents farmed sheep until the miners forcibly bought the farm to make a dam (that was never built), and her grandparents once green dairy farm was erased by Loy Yang's concrete cooling towers. Her parents' marriage collapsed, and their family farm was erased by the fires of Black Saturday in 2009. The 2009 fire also threatened her elderly mother's farm (and person), in Churchill, only saved by the waterbombers. Her stepfather died of a stroke shortly after the Hazelwood Coal Mine Fire, the property inundated with smoke for months. Her deceased father's remote property on the land of the Bidwell people burnt to a crisp on New Year's Day 2020.

Out of these connections to the Valley, this paper unfolds a post-qualitative inquiry into the educational consequences of the Hazelwood Coal Mine Fire in 2014. As Elizabeth St. Pierre (2011) explains, a post-qualitative inquiry is not a variation of, nor a methodology to add alongside, qualitative, quantitative and mixed methods research methodologies. Indeed, it '*is not a methodology at all*', because it offers 'no pre-existing research designs, methods, processes, procedures, or practices' that tell you exactly how to conduct a research project step-by-step (St. Pierre, 2020b, p. 1). There is no tidy method to be unproblematically described and applied throughout all research projects (Lather, 2013). Rather a post-qualitative inquiry is more of a situated form of ontological research that is relieved of the conventional dependency on a procedural method (A. Y. Jackson, 2017).

This type of inquiry is increasingly recognised as being essential at this point in history (Mazzei, 2020). This is because the growing number of complex issues that the global community must face today, including the ecological crisis, require integrated and adaptable approaches to research that conventional research practices and established conceptual frameworks discourage due their reliance on a 'dogmatic image of thought' (St. Pierre, 2020a, p. 482). For example, although the ecological crisis is clearly a biophysical process, involving questions about carbon dioxide emissions, and drawing upon knowledge from fields such as ecology and geochemistry, it also provokes questions about the viability of alternative energy technologies that rely heavily on knowledge from the disciplines of engineering and economics. In addition, understanding the causes of, and lack of effective responses to, climate change thus far clearly requires knowledge of the numerous socio-historical, political, psychological and educational factors at play. Thus, engaging with these issues

increasingly require us to move beyond ‘doing, thinking, finding, and representing *what is*’ in the hope that it might avoid repeating the normalised discourses of the day that rarely provide an adequate explanation as to why our experiences are the way they are (St. Pierre, 2020b, p. 2).

It is towards the creation of such an enabling approach to research that we find value in a post-qualitative approach to inquiry. However, it is important to note that this onto-epistemological stance is not something that lends itself to being *applied* to a research project in the conventional sense (St. Pierre, 2020a). Instead, it is perhaps best thought of as a type of feeling-thinking without method that seeks to explore ‘what *might be* thought and done’, to consider what is *not yet*, but might be soon *to come* (St. Pierre, 2020b, p. 2). In so doing, we maximise the potential to think anew, to make connections between different types of information, and create new lenses of thought (St. Pierre, 2019).

Instead of thinking with method, we engage in ‘thinking with theory’ to analyse the Hazelwood Coal Mine Fire as a material consequence of entangled political choices (A. Y. Jackson & Mazzei, 2012, p. vii). We argue that a historical and political preference for certain theories contributed to the materialisation of White’s experience of education in the Valley. Our contribution is that we incorporate what we understand as our response-ability to explore other material-discursive possibilities. We consider Barad’s (2012) conception of response-ability to account for how economic growth became a pillar in our education policy, notice the consequence of this materialisation and speculate otherwise. As Barad (2012, p. 215) writes, ‘Each of “us” is constituted in response-ability. Each of “us” is constituted as responsible for the other, as the other’. Building upon this idea, we argue that we have a response-ability to explore other material-theoretical possibilities and speculate that by thinking with different theories we can materialise other perspectives of reality (Barad, 2012). Perhaps one in which we creatively enact a more desirable educational, ecological, and economic future for the land and young people of the Valley.

## Fire in the valley

The land through which the Latrobe River flows, in between the Baw Baw and Strzelecki Ranges, has a long and rich history. How this land is understood is something that has changed across time and is interpreted differently by different people (Department of Environment Land Water and Planning [DELWP], 2019). For example, the traditional owners of the land, the Brayakaulung clan, of the Gunaikurnai people, called the river Durt yowan for tens of thousands of years (DELWP, 2019; Gunaikurnai Traditional Owner Land Management Board, 2018). However, when European settler-colonisers arrived in the 19<sup>th</sup> century the river was renamed after the first Lieutenant-Governor of the Colony of Victoria (DELWP, 2019). Today, the place known as the Latrobe Valley, is perhaps best understood as a network of places along that river, in the heart of modern-day Gippsland, the largest region in the State of Victoria, in the south-east of the Commonwealth of Australia.

Surrounded by eucalypt forests, bushfires are a natural part of the local ecology, and major fire events occur relatively frequently in the Valley, particularly during periods of low rainfall and drought, which are closely associated with el Niño events (Harris, Nicholls, & Tapper, 2014). Consequently, the local ecosystem has evolved with, and in response to, changing levels of fire activity over many millennia, resulting in the Valley being amongst the most fire-prone areas of the world (Attiwill & Adams, 2013).

However, since the turn of the century, increasingly atypical Victorian summers have contributed to a notable increase in the frequency and intensity of ‘mega-fires’ in the region (Attiwill & Adams, 2013, p. 45). The worst of these, the Black Saturday bushfires of 2009, claimed the lives of 173 people, far exceeding the loss of life in any earlier Victorian bushfire tragedy (Teague, McLeod, & Pascoe, 2010). On that day, the temperature reached 46.1°C in the Valley, fuelling the Churchill fire as it burned through 25,861 hectares, destroying 145 houses and claiming

the lives of 11 local people while injuring 35 more (Teague et al., 2010). Four of these lives were lost on the once water saturated land of Wolfe's childhood. The Loy Yang power station, a critical part of Victoria's energy infrastructure, was also threatened by fire on this day, however the local fire crews were ultimately able to avert a catastrophe by diverting the fire away from the coal mine (Teague et al., 2010). A few years later, once again under threat from fire, the Valley would not be so fortunate.

The summer of 2013–14 brought with it especially hot and dry weather conditions to the State of Victoria, resulting in numerous records for extended periods of extreme heat being broken. The most significant of these was the hottest 4-day period ever recorded in Victoria (Bureau of Meteorology, 2014). In fact, 2014 would go on to be what was then Australia's third hottest year on record, with temperatures reaching 0.91°C above the long-term average (Bureau of Meteorology, 2015). As a result, by the time White commenced his second year of teaching at the local primary school at the end of January 2014, several major fires were already burning across the state.

On Friday the 7<sup>th</sup> of February, a fast-moving grass fire ignited at Hernes Oak, approximately 13 kilometres to the east of the school (Teague et al., 2014). By the evening, the fire was still reported as 'going' and had already covered an area of 150 hectares (Teague et al., 2014). The cooler overnight temperatures helped the Country Fire Authority to establish a containment line around the fire by the time Saturday morning arrived (Teague et al., 2014). Yet as Saturday evening approached, the residents of Hernes Oak, Coalville and Driffield were advised to evacuate their homes given the risk that the fire was predicted to pose to those areas by Sunday morning (Teague et al., 2014). White's family members were amongst those advised to leave that night. However, they chose to stay and defend their property instead, hoping for a favourable wind change that was forecast to arrive around mid-afternoon on Sunday.

As Sunday morning arrived, the temperature quickly began to climb, reaching 40°C shortly after noon (Teague et al., 2014). Then, at approximately 1.15 pm, the Hernes Oak fire escaped its containment lines (Teague et al., 2014). Shortly after, the forecast wind change arrived, alleviating the risk to those towards the north-west of the fire, but causing the flames to spread quickly in a south-easterly direction towards the town of Morwell and the nearby Hazelwood Coal Mine (Teague et al., 2014). At the same time, several other fires ignited near Driffield, which then quickly joined up to form a second fire front (Teague et al., 2014). By 2 pm, both the Hernes Oak and Driffield fires were burning close to the Hazelwood mine (Teague et al., 2014). The strong winds drove embers from both fires into the mine, causing spot fires to start, and once started, they spread rapidly and extensively throughout the coal mine, blanketing the Valley in acrid smoke and ash (Teague et al., 2014).

White's students arrived at school the next day surrounded by a grey and yellow haze. The heat of the harsh sun continued to radiate through the foul-smelling smoke and ash that filled the sky. This caused many residents to experience various degrees of headaches, skin and eye irritation, along with a variety of sinus and respiratory issues (Teague et al., 2014). Yet perhaps the biggest concern was that the smoke from the fire also contained several gases, air toxins and particulate matter that are linked to more serious immediate and long-term adverse health effects (Teague et al., 2014). Many members of the school community were particularly concerned about the elevated exposure and increased susceptibility of children to these contaminants. Consequently, all outdoor activities like physical education, recess and lunch were cancelled, and the students were directed to stay indoors all day, as a precaution against the poor air quality.

This event prompted White to consider the material scale of the challenge that was ahead for the young people of the Valley. It caused him to question what the ecological crisis meant for himself, his family, the students and the community that he calls home. In particular, he wondered if it was possible to both address the ecological crisis and protect the community's economic well-being given the community's economic dependence on the massive local deposits of brown coal. Indeed, brown coal fired electricity generation accounted for approximately 21% of Latrobe City's

Gross Regional Product (GRP) at the time, and around 20% of all jobs in the area were related to the coal mining and electricity generation sectors (Barrett, Maslyuk, & Pambudi, 2012; Latrobe City Council, 2016). As a result, while the need to address the ecological crisis was readily apparent, the question that White continued to ask was: ‘what is it that we are educating our students for exactly?’

### Education for economic growth

In searching for answers to these questions, this paper turns towards the Victorian Department of Education and Training’s [DET] (2018) Strategic Plan. This document outlines DET’s objectives as being to:

- ensure Victorians have equitable access to quality education and training
- work with providers and partners to build an integrated birth to adulthood education and development system
- support children, young people and adults with well-coordinated universal and targeted services close to where they live
- activate excellence, innovation and economic growth.

The last point, that a core objective of Victoria’s education system is to facilitate economic growth, drew our attention and caused us to explore how the governance and provision of education in Victoria had become entangled with the objective of economic growth. The literature on educational economics indicates that this entanglement is a relatively recent phenomenon. Indeed, it wasn’t until the work of Mincer (1958), Schultz (1961) and Becker (1964), and their collaborators from the University of Chicago in the post-World War II era that the relationship between education and economics began to be distinctly theorised.

The time at which this happened is important because interest in the relationship between education and economic growth is, at least partially, a consequence of a very specific historical moment (Holden & Biddle, 2017). For example, one notable feature of the era was that relatively little was known at the time about the causes of economic growth, nor about how to best promote it (Fabricant, 1954). The emphasis in the economic literature at the time was on the importance of accumulating physical capital (Becker, 2011). However, a growing number of studies had begun to conclude that only one-eighth of the total increase in growth was traceable to increased physical capital (Solow, 1957). With the remaining seven-eighths being constantly attributed to what was referred to as the ‘residual’ (Domar, 1961, p. 709). Accounting for the residual quickly became an intriguing theoretical puzzle and given the rising political and economic focus on growth following World War II, amidst the Cold War, it was soon designated as a puzzle of the highest priority (Holden & Biddle, 2017). These forces incentivised research that sought to enrich the understanding of how to achieve economic growth. The contribution from Schultz and Becker on this front was their theory that the gradual accumulation of human capital in the economy had a major role in explaining this puzzle.

In the decades since, different theoretical models have emphasised different mechanisms by which education contributes to economic growth (Hanushek & Woessmann, 2020). Three of these models will be noted here. First, in augmented neoclassical growth theories (Mankiw, Romer, & Weil, 1992), education contributes to the accumulation of human capital in the workforce, which increases labour productivity, and thereby the economy grows towards a higher equilibrium level. Second, in theories of endogenous growth (Aghion & Howitt, 1998; Lucas, 1988; Romer, 1990), the primary effect of education is that it enhances the capacity for innovation within an economy, and the new ideas, technologies, products and processes that result from this innovation contributes to economic growth. Third, in theories of technological diffusion (Benhabib & Spiegel, 1994;

Nelson & Phelps, 1966), education contributes to the distribution of knowledge needed to operate and implement new technology. Once these technologies are widely implemented and properly operationalised, they increase productivity and contribute to economic growth.

International development institutions like the Organization for Economic Co-operation and Development (OECD) (2007) have embraced and promoted these theories about the relationship between education and economic growth in recent decades. As a result, it is now commonplace for the economic policies of affluent nations like Australia to emphasise the importance of education to the economy. This is one of the reasons that Australia's performance on international tests of literacy and numeracy have assumed great significance amongst economists and politicians in recent decades (Hanushek & Woessmann, 2020).

### The limits to growth

The preceding section outlined how a political and economic preference for human capital and economic growth theories in the post-war era helped materialise the contemporary entanglement between education and the objective of economic growth. In this section, we fulfil what we consider to be our response-ability to explore other material-theoretical possibilities, by drawing upon alternative theories about this relationship and materialising other perspectives of reality (Barad, 2012).

To commence, it is important to note that economic growth did not appear as a policy objective in western countries until the 1950's (Arndt, 1978). Key features of this era, including the acceleration of modern development and the economic competition of the Cold War, meant that economic growth came to be seen as an important overarching policy objective throughout the global community (Kallis et al., 2018). Schmelzer (2015) provides further detail about the significant and sudden rise in desire for economic growth.

Yet within a few decades, as economic growth and human capital theories expanded across the planet in the 1970's, some ecological economists began to theorise that infinite economic growth was not a sustainable objective on a finite planet. A notable example of this is a 1972 book named *The Limits to Growth* (Meadows, Meadows, Randers, & Behrens, 1972). In which Meadows et al. (1972) investigated if there were any limits to five major trends of global concern. These concerns included: accelerating industrialisation, rapid population growth, widespread malnutrition, the depletion of non-renewable resources and a deteriorating environment. They concluded that on a finite planet these forces could not continue to grow forever because they would eventually cause severe damage to the supporting environment and exhaust the materials that they were dependent upon. In fact, they found that if existing trends continued unchanged that 'the limits to growth on this planet will be reached sometime within the next one hundred years' (Meadows et al., 1972, p. 23).

These critiques were rebutted by a theory known as Ecological Modernisation (EM) (Mol, Sonnenfeld, & Spaargaren, 2009). EM theory emerged during the 1980's, out of the work of a small group of Western European social scientists (Mol & Sonnenfeld, 2000). EM achieved its contemporary status as the theoretical basis for international sustainability policy through its incorporation with the World Commission on Environment and Development's (WCED) Brundtland report (Hajer, 1995). The underlying argument of EM theory is that the environment can be both preserved and restored by using the inherent pressure for innovation in market economies to drive technological development, and that these developments will reduce the resource and environmental intensity of contemporary industrialism (Mol et al., 2009).

A related idea is the hypothesis of an Environmental Kuznets Curve (EKC) (Stern, 2004). According to the original EKC hypothesis, economic growth initially leads to an increase in pollution and environmental degradation, then at some level of income per capita, the trend reverses and economic growth leads to a reduction in these environmental impacts (Stern, 2004). This

phenomenon is known as decoupling. Decoupling is theorised to occur because as incomes rise, more resources will become available and these can be allocated to support innovation and further development of environmental solutions, such as green technology. This process is thought to be further encouraged by increased public demand for improvements in environmental quality as people become wealthier (Stern, 2004).

However, in the time since EM and EKC became the default theories driving international sustainability policies, hundreds of studies have explored the empirical evidence as to whether decoupling between Gross Domestic Product (GDP), resource use and GHG emissions is actually occurring (Haberl et al., 2020; Wiedenhofer et al., 2020). In one large systemic review of this evidence, which analysed the full texts of 835 empirical studies on decoupling, it was concluded that 'large rapid absolute reductions of resource use and GHG emissions cannot be achieved through observed decoupling rates' (Haberl et al., 2020, p. 1; Wiedenhofer et al., 2020). Implying that alternative strategies, beyond those derived from EM theory, will be required if we are to meet our shared global climate targets.

The evidence from these reviews supports similar findings by the United Nations Environment Programme (UNEP). For example, in the latest Global Environment Outlook report, UNEP (2019) concluded that historical decoupling trends indicate a global temperature increase of more than 2°C and that bolder action is required given the looming exhaustion of the remaining carbon budget:

As a broad guideline, the rate of decoupling CO<sub>2</sub> emissions from GDP needs to increase from the historic rate of 1–2 per cent per year to between 4 and 6 per cent per year between now and 2050 if the Paris Agreement targets are to be met (UNEP, 2019, p. 512).

In other words, multiple large-scale reviews of the available empirical evidence have concluded that despite the preference for EM theories within sustainable development policymaking circles, the emphasis on technological and market-based solutions to the ecological crisis is unlikely to be sufficient to avoid ecological breakdown. Implying that if we accept our response-ability to consider alternative theoretical possibilities, such as the theory that there are limits to growth, then what materialises is an alternative perspective of reality in which a global transition away from the objective of economic growth is recognised as a necessary feature of any adequate response to the ecological crisis.

### **A post-growth society**

Given that economic growth is a key objective of Victoria's education system, it is likely that a global transition away from the pursuit of economic growth will have significant consequences for educational policy and practice in Victoria. Thus, if this alternative material-theoretical view of reality is accepted, then we must subsequently accept our response-ability as a praxis to educate the young people of the Valley, and perhaps the global community, for a society in which there is no longer economic growth.

What might it mean to educate for this type of society? How might this alternative vision of a sustainable future impact the design of educational policy and practice today? In this section, we speculate as to how a post-growth society might differ from our current growth societies in an attempt to provide a basic platform upon which ideas of a post-growth approach to education might be built. In so doing, we engage with post-growth theory, in which we find an abundance of different ideas about how a post-growth society might operate (Daly, 1991; T. Jackson, 2017; Kallis, 2018).

One of the core features of a post-growth society is that it would be populated by people who would strive to realise a sustainable balance between the land and human society (Bookchin,

1980). Communities would be carefully tailored to the local ecosystems that they are located within (Bookchin, 1980). There would be an emphasis on minimising the consumption of material inputs and the output of waste by designing products that are more durable, more easily repairable, and that allow their constituent parts to be more easily recovered and recycled (Kirchherr, Reike, & Hekkert, 2017). There would be a return to smaller, more diverse and more autonomous local economies (Mocca, 2019). This would mean that the need for carbon intensive supply chains would be reduced (Payán-Sánchez, Pérez-Valls, & Plaza-Úbeda, 2019). In addition, by working closer to where they live, people could reduce their dependency on cars and make better use of low or zero emissions forms of transport like walking, cycling and public transport (Cattaneo et al., 2022).

A post-growth society would also necessarily produce less goods and services. As a result, the economic priority would need to be on ensuring that there are enough core goods and services for everyone, such as food, water, housing, clothing, health, transportation and education (Alexander, 2015). Nevertheless, a post-growth society would clearly mean a reduction in the material standard of living for many people. However, a decline in the material standard of living is not the same thing as a reduction in wellbeing and a critical task for a post-growth education would be to affirmatively materialise this difference. This is because whether wellbeing increases or declines will depend upon how much people's values and perceptions change, how much they enjoy the time recovered from the cycle of growth in production and consumption, and the extent to which they embrace new life objectives as meaningful and valuable pursuits, rather than allowing the pursuit of economic success to continue to be all-consuming (Kallis, 2018; Latouche, 2018). Education will clearly have a role to play in enabling such change to take place.

A greater sense of wellbeing might also be realised by encouraging a cultural emphasis on conviviality (Illich, 1973). This would mean that people would be afforded the autonomy to freely determine the manner and ends to which they expend their own energy, while also being granted fair and ample access to the tools and social institutions that allow them to realise those ends (Illich, 1973). This might allow people to spend more time engaging in simple leisure activities like reading books, playing games and listening to music. By enjoying outdoor activities like bushwalking, cycling, kayaking, surfing and camping. By attending cultural activities like film and culinary festivals, or music, dance, and theatre performances. By participating in personally meaningful local community and political projects. By enjoying artistic pursuits like photography, painting and writing. By engaging in craftsmanship, artisanal production or tinkering with and maintaining existing goods. By engaging in freely chosen educational activities, such as exploring topics of personal interest or social significance, rather than to simply acquire the knowledge or skills preferred by certain employers.

Supported by this shift in life objectives and cultural values, this additional time could be spent engaging in less materialistic activities that are known to improve wellbeing, such as more time with family and friends (Pelloni, 2016). Indeed, some post-growth scholars argue that strong and positive relationships, rather than the accumulation of material goods, is the foundation upon which our wellbeing is really derived (Kallis, 2018; T. Jackson, 2017). Consequently, a post-growth society would help foster stronger relationships between people and their environments and encourage them to dedicate more time to the care of others (T. Jackson, 2017). Indeed, many people already accept a lower income so they can prioritise the care of their children, or elderly and disabled relatives and indeed the planet (T. Jackson 2017).

In fact, although a post-growth community will necessarily consume less, for those who find value in the simple life offered by a post-growth community, it may be a more prosperous society. This is what T. Jackson (2005, p. 19) describes as the 'double dividend' of a post-growth society. Which we know is possible in a post-growth society given that the global economy already consumes more energy than is required to provide a decent standard of living for everyone on the planet (Millward-Hopkins, Steinberger, Rao, & Oswald, 2020; Oswald, Steinberger, Ivanova, & Millward-Hopkins, 2021). As a result, whether a reduction in our material standard of living

is experienced as a reduction in wellbeing will also depend upon how well the available energy and materials are distributed amongst all the members of the global community. Consequently, several redistributive mechanisms would also need to be embraced in a post-growth society. Although these proposals are likely to be met with fierce political resistance, redistribution could be achieved through policy instruments like income caps and taxes on capital (Buch-Hansen & Koch, 2019; T. Jackson & Victor, 2021).

Educating for this kind of society might not only enable a more desirable ecological future for the children of the Valley, but perhaps a richer educational experience too. Indeed, we propose that rather than simply adding new topics and activities to the school curriculum, a post-growth approach to education would be about equipping students with the knowledge and skills to connect with, understand, live well in, sustain and regenerate, the places in which they live (Jickling & Sterling, 2017). It would enhance students' sense of affirmative agency within their world and support their capacity to form strong response-able and sustainable relationships with the planet. It would focus on guiding students in the art of living well, on discovering personal fulfilment, on forming strong relationships, and towards the realisation of a sustainable balance in their production and consumption behaviours.

However, while these proposals provide one way of conceptualising our response-ability to younger and future generations as post-growth educators, we insist that it is not seen as the only way. Indeed, a post-growth education must firstly recognise the scale of the challenge that the ecological crisis presents for educational policy and practice. In so doing, we must also recognise our response-ability to give our students the time and space to reflect, explore, and consider the value and purpose that they already find in their own actions, and if they choose, to help them to reorientate. In other words, like a post-qualitative approach to inquiry, a post-growth approach to education must avoid the trap of disciplining and pre-determining the direction of thought. In this way, a post-growth education might support our student's capacity to think anew and embrace the complexity of the post-growth future that is yet to unfold.

### **Conclusion: education beyond growth**

In this paper we have unfolded a post-qualitative inquiry into the educational consequences of the smoke and ash that smothered a local primary school during the Hazelwood Coal Mine Fire. Instead of thinking with method, we thought with theory, in an attempt to both catalyse our capacity to think anew and to embrace our response-ability to explore other material-theoretical possibilities of the experiences and events that we described. In so doing, we have sought to elude the tendency within conventional methods to discipline and pre-determine the direction of thought that has traditionally limited our capacity to feel-think differently about historical events, our current understanding of the world, and about desirable and alternative futures.

We have considered our own material experiences of living on a planet in distress. We have explored the history of the entanglement between education and economic growth, engaged with theories about the limits to growth, and discussed the empirical evidence that implies the emphasis on technological and market-based solutions within sustainable development policy is likely to be insufficient to avoid ecological breakdown. This led us to argue for the need and value of embracing a post-growth perspective to the ecological crisis.

We have subsequently argued that because economic growth is still a key objective of Victoria's education system, that educational actors have an urgent response-ability to reconsider the objectives of education as we work to address the ecological crisis. We speculate that this will have significant consequences for educational policy and practice in Victoria. In light of this, we discussed an alternative theory of a sustainable future, in which we move beyond the theoretical fantasy of infinite economic growth on a finite planet. Upon this platform, we initiated discussion and debate about the role of education in a post-growth society.

Given the potential for post-qualitative inquiry to feel-think differently about historical events, our current understanding of the world, and about desirable and alternative futures, we believe this approach to inquiry has an important role to play in furthering and challenging the ideas that we have put forward in this paper. However, we recognise that there is also a response-ability to entertain other material-theoretical possibilities as to how a post-growth education might unfold in our future. What is clear though is that we have a response-ability to explore how education might be done differently in a world beyond growth, so that we might avoid repeatedly materialising a future form of education that takes place amidst constant smoke and ash.

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