

*The Meaning of Growth: A Hermeneutical Reading of the
Discourse of 'Growthism'*

Richard Douglas

Politics Department

Goldsmiths College, University of London

Submitted for the degree of Doctor of Philosophy

Declaration of Authorship

I, Richard Douglas, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted work of others, this is always clearly stated.

Signed:

Date: 08/07/2020

Resubmitted, with minor corrections.

Signed:

Date: 18/11/2020

Acknowledgements

This thesis could not have been produced without the financial assistance of the Economic and Social Research Council, awarded via the Centre for the Understanding of Sustainable Prosperity (CUSP) and the Politics Department of Goldsmiths, University of London. I would like to give my profound thanks to all involved in organising this funding.

My supervisors, William Davies and Alberto Toscano, have offered me invaluable assistance throughout my work on this thesis. Will, in particular, has been very generous with his time, and offered me a stream of challenge, support, and suggestions which have expanded my knowledge and developed me as an academic researcher and writer. It is from a suggestion of Alberto's, and from engaging with his written work, that I first read into the 'secularisation thesis', which became a vital part of this project.

Then there is my unofficial 'third' supervisor, Ian Christie. Ian has been a fount of ideas, readings, and encouragements throughout. His understanding of the aims of and background to my research project, especially its philosophical criticism of immanentist metaphysics, has been a vital source of support.

I feel I have been very fortunate to have been part of a research community in the form of CUSP. It has been a great home to have, all the richer for being so multi-disciplinary and multi-institutional. I have gained a lot of knowledge and insights from CUSP scholars, not least my fellow PhD students, and I would like to thank in particular all those involved in organising successive summer schools at Cumberland Lodge. I would like to thank CUSP's director, Tim Jackson, not only for all his work in creating and leading the Centre, but for his specific assistance in my work, not least his work on secular theodicy which became an important element in my research.

Goldsmiths has been my other, and very congenial, home during this work. I am grateful in particular to Goldsmiths for funding me for a qualification in teaching in higher education, and enabling me to teach classes on two modules. This was invaluable experience which I found very rewarding.

I would also like to thank the organisers and interlocutors at conferences organised by the European Consortium for Political Research and the Political Studies Association Early

Careers Network.

Finally, and most importantly, my thanks are due to my family: to my Folks for all their support; and to Rhian, Roddy, and Bea for the exquisite balance they have provided me in terms both of emotional support for, and healthy distraction from, my research.

Abstract

In the half-century since its popularisation through the publication of the *Limits to Growth* report in 1972, the ‘limits thesis’ (crudely, that societies should limit their use of natural resources before nature does it for them) has made little impression on electoral politics internationally. This thesis asks why politics have failed to act decisively on the warnings of environmental science (not least on climate change). In particular, it focuses on seeking to understand those actors within political discourse who have argued explicitly against the limits thesis. While this topic has been the subject of detailed social science investigation, the insights this produces may be constrained, it is suggested, by the adoption of a critical stance which implicitly or explicitly seeks to censure those identified as promulgating anti-environmentalist (or ‘pro-growthist’) views. This thesis seeks to make a new contribution by taking an ‘interpretivist’ approach (drawing on the philosophical hermeneutics of Charles Taylor) to understanding empathetically the positive meaning which opponents of the limits thesis attach to the idea of growth. Over four chapters in which this discourse is first defined, then subjected to increasingly interpretivist analysis, a reading is produced which suggests that in defending growth these speakers are defending the idea of progress. The final two chapters aim to understand the emotional importance which progress has for its defenders, by interpreting it as functioning as the secular ‘theodicy’ of modernity—providing a sense of meaning in the face of mortality, through an identification it offers with a human collective living on into an indefinitely extended future. The significance of this reading lies in its suggestion that the political failure of the limits thesis derives on the most fundamental level from the shortfall of existential meaning it creates, by its contradicting the idea of progress without offering a replacement ‘theodicy’.

Table of Contents

Acknowledgements	3
Abstract	5
List of Figures	9
Preface	11
Introduction	12
Research approach	15
Conclusion.....	19
1: Why the resistance to the ‘limits thesis’? A critical literature review	20
1.1. The counter-movement of environmental scepticism	22
Scepticism or denialism.....	23
Elite project or social movement	27
A note on nomenclature	31
1.2 Three sociological theories	31
The Anti-Reflexivity Thesis	32
Eco-Marxist critique: Ecological Rift Theory.....	34
Green critiques of the liberal capitalist state	36
1.3 Psychological and ideological explanations.....	39
Psychology of climate change denial	40
Defence of ideology	42
1.4 Discussion: The limits thesis as a challenge to social science	47
1.5 Conclusion.....	51
2: Methodologies of meaning: philosophical anthropology and existential social science	53
2.1 Interpretivist social science	55
2.2 Existential social science, its strengths and limitations	59
Metaphysical sociology	63
2.3 Philosophical anthropology.....	66
2.4 Philosophical hermeneutics	71
2.5 An applied methodology	75
2.6 Conclusion.....	80
3: Mapping the discourses of growthism	81
3.1 A model of environmental discourse analysis.....	82
3.2 From growthism to limitism: a high-level mapping.....	87
3.3 Three ‘real-world’ discourses of growthism	92

Environmental scepticism.....	92
Ecomodernism.....	95
Promethean socialism.....	101
3.4 Change and continuity in growthist discourses over time.....	106
3.5 Conclusion.....	108
4: The commonplaces of environmental scepticism: A rhetorical analysis ...	110
4.1 The analysis of rhetorical commonplaces.....	112
The commonplaces of environmental scepticism.....	114
4.2 The commonplaces of ethos.....	117
Commonplace: Reason and real scientific method tell us the truth about the world.....	117
Commonplace: Common sense and our experience of history are the best guides to the future.....	120
Commonplace: Ordinary people understand life and morality better than liberal elites	121
4.3 The commonplaces of pathos	125
Commonplace: Liberty is the highest good.....	125
Commonplace: There is a moral imperative to increase the material welfare of the highest number of people	127
4.4 The commonplaces of logos.....	131
Commonplace: You can't stop economic progress	131
Commonplaces: There are no limits to mankind's ingenuity and problem-solving abilities; The market co-ordinates individuals in a way that enables us to adapt to changing conditions and solve complex problems.....	133
Commonplace: The world is actually getting better and better.....	135
4.5 Conclusion: a moral defence of growth.....	136
5: 'The Economy in Mind': An ideational analysis of 'economic reality' as deployed within environmental debate	138
5.1 The story of eternal growth	140
5.2 An ideational analysis of 'economic reality'	145
The world as mind	145
The market as a network of minds	151
Technological progress as a law of historical development	153
The nature of economic reality.....	156
5.4 Conclusion.....	161
6: Growth against death: an existential reading of growthist discourse as a defence against intimations of mortality.....	163

6.1 The party of life	164
6.2 The pursuit of immortality	171
6.3 The debate over the relevance of entropy to human life.....	174
6.4 'Infinite In All Directions': the environmental scepticism of Freeman Dyson	177
6.5 Conclusion.....	183
7: Growthism and the modern theodicy	186
7.1 The secularisation thesis debate and the nature of modernity	188
7.2 The immanence of the infinite: in four ways	195
Extensive infinity: the infinite Universe	195
Intensive infinity, and the contraction of absolute into privative infinity .	198
Infinite mind	201
Infinite progress.....	203
7.3 Conclusion: the modern theodicy	206
8: Growthism as a defence of the theodicy of modernity.....	209
8.1 Critiques of the secularisation thesis and its genealogy of progress	211
8.2 Growthist discourse as defence of a modern theodicy of progress	216
Understanding growthism as a defence of progress	216
The infinite Universe	217
The intensive infinity of natural phenomena.....	219
The fusion of limitless minds and scientific causation	221
Progress as theodicy	223
8.3 Conclusion: bringing metaphysical sociology to bear	229
Conclusion.....	232
Addressing the research questions we began with.....	232
How is limitism even possible?.....	235
The meaning of <i>The Meaning of Growth</i>	237
Appendix.....	240
Bibliography	253

List of Figures

Table 1: High-level mapping of orders of environmental discourse.....89

Table 2: Positive appeals made by environmentally sceptic rhetors.....116

Table 3: Initial selection of texts analysed in this research.....240

Table 4: List of individuals interviewed as part of this research.....247

The whole significance of progress depends on 'looking forward.' If some astronomer were to convince us that our planet would become uninhabitable in 2048, our progressiveness would lose its meaning; for why should we busy ourselves with producing better cars and better homes and better food and better health if time is running out and all betterment comes to the worst?

—Karl Löwith, *Meaning in History* (1949)

Preface

In 1969 the Vicar of Great St. Mary's, Cambridge, travelled to Belfast to give the latest in the Church of Ireland's annual series of Theological Lectures. Hugh Montefiore would go on to become, as Bishop first of Kingston, then Birmingham, a leading intellectual figure within the environmentalist movement in the UK, chairing the campaign group Friends of the Earth for several years. Surveying what he saw at that time as the globally unsustainable exploitation of environmental resources, he began his 1969 lectures with the declaration: 'It seems to me probable that the future of man as a species may be decided in the next half-century' (Montefiore 1969, p. 15).

A half-century later the Theological Lecture was delivered by the climate scientist Katharine Hayhoe. Referencing wildfires, floods, and hurricanes, she began: 'These days, it's hard *not* to hear about climate change' (Hayhoe 2020). And yet nor was it hard to hear prominent voices—she cited politicians in the United States, Canada, Australia, and the UK—describing climate change as a myth, and urging inaction with regard to it. In recent years, in the United States and other countries, popular scepticism regarding climate change and the need to mitigate it had been rising, she said, fuelled by its becoming a feature of politically partisan (right-wing) identity. Scientific evidence and rational argument had been found to be insufficient to persuade those sceptical of it to take climate change seriously.

Juxtaposing these two lectures presents us with a troubling vignette. We have a warning, made in the formative stages of the contemporary environmentalist movement, suggesting that humanity has a fifty-year window to place its relationship with the natural environment on a sustainable footing—and that to fail in this test will mean we are stuck, perhaps irrevocably, on a path towards self-destruction. We then have a report, at the end of that window, suggesting that politics, in multiple states, has been disabled during this crucial period by an apparently irrational refusal within the political sphere to take action to preserve our safety.

How did we get from there to here? Why has the environmentalist movement not enjoyed more decisive political influence in this time? How have our politics taken a debilitatingly irrational turn? What can explain the scepticism towards environmental science?

These concerns form the backdrop to this thesis.

Introduction

The Limits to Growth (Meadows *et al.* 1972), a report produced for the Club of Rome's project on 'the predicament of mankind', is remembered as one of the central texts of the contemporary environmentalist movement (Dobson 2007, Parenti 2012).¹ Profoundly influential, it has given its name—in the form of the 'limits to growth thesis'—to one of the 'two core principles' said to define environmentalism (Connelly and Smith 2002, p. 52).² In its positive form, this 'limits thesis' draws on physics, environmental science, and common sense to describe the ecological basis of economics. It says that the material resources available for economic exploitation are finite; that economic activity always uses some resources up irreversibly; and thus economic growth cannot proceed beyond certain material limits. Its normative form builds on these premises to argue that political authorities should pre-emptively constrain material consumption in order for economies to remain within these limits. The alternative, it warns, is the coming of environmental crises, economic breakdowns, and ultimately social collapse. As one of the authors of *Limits to Growth* (henceforth, *Limits*), put it: 'No physical entity can grow forever. If [societies] do not choose and enforce their own limits to keep growth within the capacity of the supportive environment, then the environment will choose and enforce limits' for them (Meadows 2009, p. 103).

In an annex to *Limits* the Club of Rome's Executive Committee expressed the hope that the report would 'lead to a fundamental revision of human behavior, and, by implication, of the entire fabric of present-day society'. They stressed that: 'The effort must be resolutely taken without delay, and significant redirection must be achieved during this decade' (King *et al.* 1972, pp. 190, 193). In reality, half a century later we could conclude that the impact of the limits thesis on government policy internationally has been negligible. This is not to say that environmentalism has been without political influence: such has been this influence—with notable successes such as the remediation of

¹ Numerous observers (e.g. Guha 2014) date the birth of this contemporary environmentalist movement to the publication of Rachel Carson's *Silent Spring* (1962). Guha describes this as the 'second wave' of environmentalist consciousness, whose first wave dates back to the Romantic movement at the turn of the nineteenth century.

² Connelly and Smith suggest the other of these two core principles is the 'ethical basis of our obligations to the non-human world'. Throughout this thesis I distinguish between these two principles by referring to that element of environmentalism that campaigns for the political enactment of the limits thesis as 'limitism' (see Chapter 3 for further elucidation).

the hole in the ozone layer following the 1987 Montreal Protocol—that a literature has grown to analyse the ‘environmental state’ (Duit *et al.* 2016). But as a pair of esteemed observers of environmental politics put it some three decades after *Limits* was published, the idea of imposing limits to material growth has ‘failed to make any impression at all on the content of public policy, anywhere’ (Hunold and Dryzek 2005, p. 78).³ Or, to bring such observations up to the present day, despite an amount of academic and popular interest in ‘steady state’, ‘postgrowth’, and ‘degrowth’ economics (programmes for redesigning economies around the limits thesis): ‘In reality, there are no economies embarking on such paths’ (Smil 2019, p. 495).

Why have polities failed to enact the limits thesis during this period, when such inaction would appear to run contrary to both environmental science and a basic instinct for self-preservation? This is the overarching research question that motivates the inquiry pursued in this thesis.

From within the perspective of the limits thesis—whose analysis, to be explicit, I endorse—this question appears as not only a worthy intellectual puzzle but an urgent practical issue. What provides this urgency is that in the five decades since the limits thesis rose to prominence, the historical clock, in terms of environmental exploitation, has advanced at a considerable rate—global annual resource extraction more than tripling between 1970 and 2017, for instance (Oberle *et al.* 2019, p. 27). It is not just that actual trends in global population, industrial production, resource extraction, and pollution have all continued on similar trajectories to those modelled in the original *Limits* report (Hall and Day 2009, Turner 2014).⁴ It is also that environmental science has begun increasingly to highlight potentially alarming impacts in a number of ecosystems; notably, four of nine earth systems have been rated as having already exceeded what have been deemed as ‘safe’ planetary boundaries (Steffen *et al.* 2015). Regarding climate change in

³ Writing around this time the original *Limits* authors declared that inaction on their initial warnings had already taken global society into an ‘overshoot’ scenario modelled in their earlier work: a phase in which economies were still growing, but unsustainably, with the consequence of some form of unavoidable collapse taking place at some point (Meadows *et al.* 2004).

⁴ Smil (2019, p. 494) offers a counterpoint, voicing concerns as to the crudeness of the software programming underlying the projections of resource depletion and pollution. For this reason he sees *Limits* as ‘essentially an exhortation, a call for change’ rather than a detailed projection of future scenarios. Yet this does not lessen the validity of its message: irrespective of *Limits*’ computer modelling it remains a fact that (p. 507) ‘our understanding of the dynamic links between the state of the biosphere and the fortunes of our civilization makes it clear that all of the trends that have been moving in undesirable directions will have to be, sooner rather than later, curtailed if not reversed’. The limits thesis stands to reason, this commentary suggests, its validity not dependent on the computer modelling in the *Limits to Growth* report.

particular, there is evidence of a rise in adverse impacts and trends: in 2019 it was reported that the four years 2015–2018 were the hottest on record (NASA Global Climate Change 2019), with atmospheric concentrations of CO₂ showing no signs of stabilising (Dunn et al. 2019). That this is a matter of serious importance follows from the fact that certain scenarios identify climate change as a potentially existential threat to civilisation (e.g. Xu and Ramanathan 2017, Wallace-Wells 2019).⁵ Consciousness of the increasing gravity of ‘the predicament of mankind’ today is reflected in the contemporary discourse of ‘the Anthropocene’. Originally coined as a term of stratigraphy, to describe a new era in which humanity has decisively imprinted itself on earth systems, the Anthropocene has already become a well-worn term within political and cultural theory. It stands, above all, for an apocalyptic view of the future (Northcott 2015).

On the face of it, the seeming inability of states the world over to adopt a policy of curbing the unsustainable use of resources might suggest that modernity has become afflicted with irrationality. Certainly, some might be tempted to apply such a diagnosis to those who make up the ranks of a partisan opposition movement in ‘the limits to growth debate’. It is my contention, however, that from within its own perspective such explicit opposition (here dubbed ‘growthism’) will possess a certain rationale which makes internal sense of its propositions; and it is this territory which I aim to enter and to map in this thesis. In this I aim to borrow from Finlayson (2018), who has analysed other political movements that may often be characterised by many as being irrational (such as Brexit). It may make more sense of such arguments, he suggests, to investigate the religious investment in such movements. While political science is wont to regard the religious outlook as being irrational, ‘sometimes, to understand political movements and ideologies we need to understand the “religious” aspects of their ideas. We need to know how they orientate adherents towards the world so that they may find themselves within it’. Most of all, Finlayson suggests, we need to look for their ‘underlying “metaphysics”—an image of the world linked with a belief in redemption’ (Finlayson 2018, p. 599). This is the overarching frame within which I will be investigating the beliefs underlying growthism.

⁵ It should be noted that a number of prominent climate scientists caution against using doom-laden rhetoric regarding potential climate scenarios, on the grounds that, by suggesting that nothing can be done to alter this future, it encourages people to do nothing (e.g. Mann *et al.* 2017).

It is another contention of this thesis, drawing notably on the work of John Dryzek (2013), that growthist arguments make explicit the challenges which the limits thesis poses to the world-view of secular, progressive, modernity as a whole. In this sense, the suggestion is made here, growthism's opposition to the limits thesis may be shared, in more implicit form, more widely throughout modern society. Analysis of explicitly growthist argument may then, it is hoped, help to isolate the intellectual stumbling block preventing a more general political acceptance of the limits thesis.

What is the growthist structure of ideas? How should we understand this championing of growth in the face of warnings as to environmental limits? *What is the meaning of growth within this discourse?* This is the more circumscribed group of research questions that the following chapters will seek to address directly. In examining why its determined opponents have argued against the limits thesis I will aim to suggest an answer to my overarching question, as to why the limits thesis has been unsuccessful overall.

Research approach

This is an interdisciplinary thesis, featuring two research activities, both underpinned by common philosophical foundations. To begin with these foundations, these can be understood as comprising a number of layers. The first layer—the initial methodological category this thesis can be sorted within—is that of *interpretive social science*, specifically political science. This signals a recognition that human action is not deterministic; that it is best understood through narrative interpretation, aiming to capture the experience of individuals which manifests itself in action; that this emphasis on narrative and interpretation makes this study an example of the 'human sciences', belonging equally to the humanities as to the social sciences; that the measure of the truth of an analysis lies in its explanatory power and consistency within a web of theories; and that interpretation, being never value-free, is the more objective for being self-conscious of its normative basis.

The second layer of methodological form can be described as *existential social science*. This describes an approach to understanding human lives which asserts that the fundamental driver of our actions is the search for meaning, in the sense both of making sense (being comprehensible) and of mattering (feeling significant). Most importantly, as

we humans are uniquely conscious of our own mortality, this approach holds that our overarching quest is for a sense of meaning in the face of death. In the hands of some of its theorists, however, existential social science can reduce this quest for meaning to a mere psychological reflex or delusion, in the process undermining any sense of human life's actually having any meaning. For this reason, I identify my work with a particular form of existential social science that may be described as *metaphysical sociology* (my third layer of research theory). This recognises the importance to us of understanding that our individual lives are not only rooted within a social order which extends beyond us, but that society itself is grounded in some kind of 'metaphysical' or 'cosmic order': thus our quest for our mortal lives to make sense is set within a need for the world as such to make sense, on some fundamental level.

My research does not remain confined to this form of research philosophy. The explanation for this is that metaphysical sociology, belonging in form to the social sciences, still tends within its analysis to bracket out its own metaphysical commitments. However sympathetically it regards the metaphysical beliefs of its subjects, in practice these are often treated more as psychological phenomena to be studied than as apprehensions of reality that may be judged in terms of their pursuit of the truth. It is a desire to take this extra step that takes me to my fourth layer of research philosophy, that of philosophical anthropology. Drawing on the work in particular of the philosophers Charles Taylor, Eric Voegelin, and David Levy, I adopt a concept of philosophical anthropology which sees it as an applied philosophical inquiry into what it is to be human. This concept understands the human quest for meaning, especially in the face of mortality, to be fundamentally a search for ontological foundations (what Voegelin calls 'the ground of being'). It affirms the reality of a metaphysical dimension to existence, and thus critiques those aspects of a modern, secular world-view that maintain an 'immanentist' or materialist understanding of reality: these it understands to be in some form incomplete, occluded, or self-deceiving. In particular, it is alive to the longings for metaphysical connection that may lurk behind apparently secular, worldly pursuits.⁶

⁶ To make my own metaphysical commitments explicit, I affirm a vision of reality, close to Voegelin's, which recognises the existence of a transcendental dimension, and which sees human life as taking place in the 'in-between' of immanence and transcendence. Informed by this vision I join Voegelin in criticising the 'immanentism' of wholly secularised views of reality as necessarily incomplete since, as Hughes puts it (2003, p. 19; emphasis in the original), '*the entire universe of objects and relations in space and time is not a complete or sufficient explanation of its own existence.*' This Voegelinian vision can be understood as an esoteric form of theology, whose animating principle is the philosopher's quest to understand fundamental truths about reality, rather than any points of canonical religious dogma.

The final layer, or category to which this research approach belongs, is that of philosophical hermeneutics, in a form associated in particular with Charles Taylor. This describes an activity which seeks to read human thought, action, and products for the meaning which lies within them, as though they were texts. Adopting this as an overarching method, I seek to draw together all those other layers of theory into one applied form: a method of interpreting the beliefs and works of other people, through close reading of their words and actions, with reference to an underlying set of theories concerning the human drive for chaos-defying meaning.

These layers of research philosophy are set out in detail in my methodology chapter, Chapter 2. This takes as its point of departure my conclusion to Chapter 1, featuring my literature review. This is described as a *critical* literature review precisely for the reason that it finds much of the existing social science literature at odds with the interpretivist approach being adopted here. However penetrating such analysis may be, often it appears circumscribed by its analytical attitude towards those agents perceived to be responsible for driving political resistance to the limits thesis: regarding these as an ‘other’ implicitly or explicitly to be blamed, such analysis forestalls itself from the kind of empathetic understanding that could make sense of such behaviour on its own terms—if not go further, and translate it into a philosophical-anthropological analysis of an important example of a human response to a predicament facing all of mankind.

Having set out my methodological approach to my problem and how it stands in relation to existing research, my first of two original research activities takes up Chapters 3-6. In these chapters I first define the discourse of growthism—drawing on an initial analysis of twenty authors, as well as original interviews with a further twenty speakers (details in the Appendix)—before subjecting it to successive forms of textual analysis. In doing so I operate on a ‘meso level’ of analysis, in which theoretical analysis of an overarching discourse and commentary on the features of individual remarks are used to mutually inform each other. In these chapters I draw on different registers of methodology, utilising discourse analysis (to define the discourse to be examined); rhetorical analysis (focusing on the positive values the rhetors of this discourse are concerned to defend); ideational analysis (reconstructing the ‘picture of reality’ these rhetors believe describes the relationship between man and nature); and metaphysical sociology, here representing not just an overarching field but a specific form of applied cultural critique (to read growthist discourse for what it reveals about its rhetors’ search

for meaning in the face of mortality). The intention behind drawing on distinct methodological fields in successive chapters is that each will complement the analytical approach it takes to the subject matter, with the four of them complementing one another to produce a synoptic view as a whole. In practice, all four chapters are united in the basic methodological technique of textual analysis, paying close attention both to what is actually being said and to the emotion with which it appears to be invested. In this sense, it might be possible to subsume these approaches all under the heading of communication studies. An even better term would be hermeneutics, these four chapters all displaying a hermeneutical reading of texts for overlapping layers of meaning.

In total, these chapters provide an empirical body of new knowledge: they aim to set out an account, at once wide-ranging and based on detailed observation, of the concerns growthism is defined by, the values it defends, the way it views reality, and its most fundamental motivations. In short, this is an attempt to sketch a world-view.

In the two concluding chapters of this thesis I work with this representation of a world-view and seek to make sense of it, to place it and the concept of growth at its core into a wider context. This leads me to perform a reading of growthism through discussion of the ‘secularisation thesis debate’ (associated with figures such as the philosophical anthropologists Karl Löwith and Hans Blumenberg): this involves attempts to interpret the overarching world-view of modernity as having been shaped by preceding theological attempts to make sense of man’s place in the cosmos. A review of this debate in Chapter 7 brings out a central point of emphasis: that the turn to modernity as an epoch has been marked by the adoption of a new metaphysical concept of an immanent (material, temporal, this-worldly) infinity. Combined with breakthroughs in scientific method, so this analysis goes, this led to the rise of the idea of progress as a form of secular faith. In Chapter 8 I take this portrait of the metaphysical foundations of modernity and progress, and hold my impression of growthism up to it: in practice this means making a reading of the material excavated in earlier chapters for concerns to defend concepts of infinity—a material infinity in nature, an infinite expanse of future time for humanity, an infinite capacity for progress through accretions to knowledge—which were among the legacy of the scientific revolution.

These final two chapters are where this thesis moves more fully onto the territory of philosophical anthropology. They are necessarily more speculative than those chapters which precede them; in part they function as an invitation to further analysis. In fact the

two research activities in this thesis have been intended to operate discretely. The empirical analysis of growthist discourse is not dependent on the philosophical-anthropological interpretation which follows, and may be appraised on its own terms. Nevertheless, the attempt made in Chapters 7 and 8 to place the results of the earlier empirical analysis in a further interpretive context offers at least a suggestive frame for understanding growthism in a deeper sense. In this endeavour it is at one with the ethos of philosophical anthropology and hermeneutics which inspires this work.

Conclusion

The Conclusion to this thesis seeks to gather up all the preceding threads. After summarising the research laid out in the course of the thesis, and advertising this work's robustness to certain potential lines of critique, it seeks to put the whole thing into focus and to make sense of it all. It aims to provide an answer as to the meaning of growth within the discourse of growthism, and from this to suggest a wider significance which may help us to account for the relative failures of the limits thesis to date. Beyond this, it finally trains an interpretivist eye on itself. In seeking out the personal motivations for addressing this topic—what it means to me—it strives to align the focus of the entire thesis on the common human predicament described by the limits thesis. If limitism does fundamentally contradict a modern faith in progress, then the limits to growth debate most fundamentally represents a human crisis of meaning. In this sense, we might say, the meaning of inquiring into the meaning of growth is to underline the importance—at once practical and philosophical—of studying the human quest for meaning.

1: Why the resistance to the ‘limits thesis’? A critical literature review

At the heart of the *Limits to Growth* report (Meadows *et al.* 1972) is the seemingly commonsensical message ‘that in a finite world, material consumption and pollution cannot continue to grow forever’ (Johnson, in Bardi 2011, p. ix). The prudential case this implies is that we should proactively limit our consumption and pollution within sustainable limits before—putting it crudely—nature does it for us.⁷ While the *Limits to Growth* has been widely rubbished by critics of environmentalism (e.g. Beckerman 1974, Lomborg and Rubin 2009, Bailey 2012), its basic arguments and many of its individual projections have been validated by experience over the past half-century (Nørgård *et al.* 2010). But despite enjoying both rational and empirical support, the limits thesis has ‘failed to make any impression at all on the content of public policy, anywhere’ (Hunold and Dryzek 2005, p. 78). Why is this?

In view of the increasingly stark warning signs on climate change (e.g. IPCC 2018) and other aspects of ecosystem health (Steffen *et al.* 2015), this inaction in response to the limits thesis appears equally alarming and perplexing. In failing to act on scientific warnings, established politics appears to be in the grip of irrationality, and the state failing to obey its ‘supreme law’: to protect ‘the safety of the people’ (Hobbes 1998 [1642], p. 143). The question as to why the limits thesis has been ignored by governments throughout the world presents a doubly profound case for social science to investigate: intellectually it presents the deepest mystery, while practically it presents an existential threat.

As a first step in the attempt I am making in this thesis to address this puzzle, this chapter presents a literature review of attempts made by social scientists to tackle this issue to date. This literature review has a dual purpose. The first is to introduce this topic and survey the field of existing research. As a *critical* literature review, its second purpose is to highlight repeated problems across the existing field: this provides the negative case for the adoption of a different methodological approach, which is sketched

⁷ Henceforth referred to as the ‘limits thesis’.

in positive terms in Chapter 2.

Regarding the first purpose of this review, it is possible to discern at least three main types of investigation as dominating existing research; accordingly, these categories will be adopted in the structure of the review which follows. Section 1.1 reviews that type of inquiry which focuses on the role of individuals and groups who campaign against environmental policy and science, examining their interests and influence. In 1.2 we encounter a group of theories which operate on the sociological level—examining the structural logic of the economic system, for example, as working against political acceptance of the limits thesis. In 1.3 we come on to theories which concentrate on the psychological or ideological dimension, examining the way in which individuals may in effect choose to disbelieve environmental science.

This survey thus takes in a considerable diversity of approaches, spanning the disciplines of political science, sociology, and psychology. In addition, it highlights the existence of two overarching approaches to social science, cutting across disciplinary boundaries. One conforms to an orthodox idea of social science as modelled on the natural sciences, guided by a model of disinterested inquiry in pursuit of objective data. The other belongs to a set of more heterodox approaches dubbed ‘radical ecologies’ by the eco-Marxists Foster *et al.* (2010). These comprise not only Marxists but others who adopt a more radical approach to social science, in terms of being prepared to advocate for radical social change.

Despite such diversity on display, we may detect a single unifying theme underlying all the research presented in this chapter: that of failure. This takes us on to the second of this chapter’s purposes. Taken altogether, these literatures—stretching back decades, certainly to the rise of environmental sociology in the 1970s—tell an extended story of the failure to act: this much might generally be accepted by the analysts at work on these literatures themselves as true, if depressingly so. There is another aspect to this being a story of failure, however, and one that might be less apparent. For if these literatures are presenting a record of failure, then this reflects not only outwards, towards the society which has failed to act, but also inwardly, towards the social science analysis that has failed to effect change. These long-running literatures might thus be viewed, in part, as a catalogue of their own failure.

Such a statement invites dissent: isn't understanding society a big enough task, isn't expecting critique to transform the world asking too much? Social scientists are analysing a situation in which vastly powerful economic interests are at stake; what can academic critique in itself do when it finds such economic power arrayed against it?

In partial answer to such questions, this kind of meta-criticism has a precedent in the eco-Marxist critique of the 'ecological crisis of social science', which asks:

If natural science is now posing such serious questions about the continuation of life as we know it, what is the role of social science? Should it not be helping us to understand how humanity, by radically changing its system of social and economic production, which today is clearly the chief cause of the problem, might respond to this massive threat? (Foster *et al.* 2010, p. 19.)

The thesis I am presenting here shares this same recognition of the need for urgency in the face of existential environmental threats, and has a similar accent on praxis that flows from it. It is not, however, a work of (eco-)Marxist analysis. On the contrary, in section 1.4—while at the same time paying full tribute to the productive research and penetrative insights on display—I identify certain limitations in the radical ecologies approach. Principally, it is hampered by a tendency to become fixated on finding a culprit to blame for the evils of environmental destruction. This, I suggest, occludes the kind of hermeneutical empathy with the perspective of others that can make sense of social phenomena, through understanding them as common human responses to a given situation. In this case that would mean examining resistance to the limits thesis for common truths about the collective ecological predicament in which we all find ourselves today. This discussion will take us onto the territory of my preferred research philosophy—a form of philosophical anthropology, associated in particular with Charles Taylor—to be explored in the succeeding chapter.

1.1. The counter-movement of environmental scepticism

Various names have been given to the discourse of explicit opposition to environmentalism, among them the 'Green Backlash' (Rowell 1996); the 'brownlash' (Ehrlich and Ehrlich 1996); 'anti-environmentalism' (Brick 1995, Dunlap and McCright 2015); the 'environmental opposition' (Switzer 1997); 'Prometheanism' (Dryzek 2013); 'climate contrarianism' (Lahsen 2008, Schneider 2011, Brisman 2012, Boykoff and

Olson 2013, Nuccitelli 2013, Black 2018); and ‘confusionism’ (Jones 2011). The terms which appear to have the greatest currency, however, are ‘climate change denialism’ (McCright and Dunlap 2011b),⁸ and ‘environmental scepticism’ (Jacques 2009).⁹ Within this literature, differences in emphasis emerge along two main axes: the extent to which this discourse represents a sincere questioning or a dogmatic rejection of environmental science; and the extent to which this is analysed as the work of a hardcore (mainly elite) project or as a set of attitudes held by a section of the whole public. Studies frequently combine all four poles of analysis, for example depicting this discourse as being initially driven by a hardcore element which cynically defends elite interests (e.g. of fossil fuel companies), which then engenders a mixture of naïve confusion and ideological identification among receptive members of the public (e.g., Dunlap and McCright 2015, pp. 300-1).

Scepticism or denialism

The debate on the first question here, to what extent the opposition to environmentalism is sincere in its questioning, is reflected in a compact manner in concerns expressed as to what to call this discourse. While some are relatively unconcerned with this issue (Anderegg *et al.* 2010, Lejano 2019), for others this matters a great deal. A main objection from some has been the associations of ‘denialism’ with ‘Holocaust denial’ (O’Neill and Boykoff 2010, Black 2018). This has also been a source of complaint from those labelled ‘denialists’ themselves (Van Rensburg 2015, p. 9); and some commentators have argued against using such ‘offensive’ labels on the grounds it further polarises attitudes towards climate change—and is therefore counterproductive from an environmentalist’s perspective (Howarth and Sharman 2015). Others have argued that ‘denialist’ is an appropriate term (Jacques 2012), conforming with a technical understanding of the rhetorical dynamics of denialism underlying Holocaust denial, its most prominent manifestation (Lipstadt 1993, Lang 2010).

The term ‘environmental scepticism’ is preferred by some, in part out of these concerns: it is recognised as a less pejorative, hence less divisive, term. As such, it is one

⁸ See also wider usages of ‘denialism’ in this context, e.g. ‘science denialism’ (Liu 2012, Russell and Blackburn 2017)

⁹ See also ‘skeptical environmentalism’ (Beder 2011).

that is readily recognised by those who espouse anti-environmentalist arguments themselves; as Jacques (2009) notes, the term was popularised by Bjørn Lomborg, a noted figure in this discourse, in his book with the self-referential title, *The Skeptical Environmentalist* (2001). For Jacques (2009, p. 1), ‘the name “environmental skepticism” sticks in part because this is the name they claim for themselves’.

Analysts of environmental scepticism have made a number of typologies of its arguments. In an influential contribution Rahmstorf (2004) has categorised climate change scepticism into three elements: ‘trend scepticism’, which argues against the evidence of a significant warming trend in global temperatures; ‘attribution scepticism’, which argues against the evidence that human action is driving climate change; and ‘impact scepticism’, which argues against the evidence that climate change is having profoundly negative consequences. This has been presented as a three-stage theory of climate scepticism, with ‘trend scepticism’ at the apex—i.e., those who subscribe to ‘trend scepticism’ are seen as rejecting all climate science, while those who subscribe only to ‘impact scepticism’ accept at least the basic premise of anthropogenic global warming. Another noted typology has been produced by Capstick and Pidgeon (2014); they make a division between ‘epistemic scepticism’ (relating to doubts about climate change itself, and about the robustness of climate science and trustworthiness of climate scientists) and ‘response scepticism’ (concerning doubts both about the technical effectiveness of proposed mitigation measures, and about the likelihood they will be adopted). Van Rensburg (2015) adopts this typology, but adds a third element, ‘process scepticism’, which concerns doubts as to the way in which climate science is produced and translated into policy recommendations.

A significant current of analysis, meanwhile, argues against this presentation, on the grounds that what is often presented under the terms ‘environmental scepticism’ is not genuine scepticism (Washington and Cook 2011, Whitmarsh 2011, Liu 2012, Lewandowsky *et al.* 2013). For such critics, climate change scepticism is ‘the complete opposite’ of genuine scepticism: Cook describes it as ‘coming to a preconceived conclusion and cherry picking the information that backs up your opinion’ (in Van Rensburg 2015, p. 2), while Beder (2011, p. 424) describes an attitude in which someone ‘examines the evidence in order to find confirmation of his or her opposition, ignoring all the evidence that supports it.’ This practice of seeking evidence to confirm a preferred understanding of climate change, and rejecting that which would challenge it, has been

analysed as a pronounced form of ‘motivated reasoning’ (Kunda 1990, Mooney 2011, Kahan 2015, Lewandowsky and Oberauer 2016). Not only is this outlook criticised as not being genuinely sceptical, in some places it is depicted as cynically ‘weaponising’ the rhetoric of scepticism to undermine environmental science by holding it to impractically high standards of proof (e.g. Mooney 2005, Oreskes and Conway 2012). As part of a wider phenomenon of ‘post-truth’ communications, such performative scepticism has been analysed within the recent field of ‘agnotology’ (Proctor and Schiebinger 2008).

This criticism of the term ‘environmental scepticism’ extends to Jacques, even though he continues (for the sake of convenience) to use it himself. Scepticism suggests ‘a disposition to withhold judgment until more compelling evidence is provided’ (Jacques 2006, p. 78), but that is not the case with environmental sceptics, whose scepticism is ‘asymmetrical’: while casting ‘doubt on ecological science, they have an abiding faith in industrial science and technology, free enterprise, and those great institutions of Western Enlightenment’ (Jacques 2012, p. 9). What truly defines this group is not scepticism but ‘*faith* [...] that any worry we may have—sea level rise, grain shortage, groundwater depletion—will not cause real “problems”’ (Jacques 2009, p. 1).

This analysis, suggesting that the self-presentation of ‘environmental sceptics’ should not be taken at face-value, leads to a different interpretation of the typology of arguments which Rahmstorf presents as a three-stage theory. Rather than trend scepticism, attribution scepticism, and impact scepticism being seen as distinct levels of scepticism, each occupied by a distinct group of adherents, others observe these positions as being used interchangeably by the same adherents, as a means of opposing different arguments at different times (e.g. Nuccitelli 2013). Hamilton, for instance, writes:

First, they deny that climate change is occurring. Then they say that if it is occurring it’s not due to humans. Then they claim that if it is due to humans, the effects are trivial. If the effects are shown to be non-trivial, they opine that the benefits will exceed the damage. If the damage is shown to predominate, they say the cost of avoiding the damage is too high. (Hamilton 2013.)

For some, this indiscriminate mobilising of oppositional arguments is the hallmark of denialism, because what it entails is the adoption of a multiplicity of *mutually inconsistent* theories, to be used as a multi-pronged tool with which to attack an established theory (Lewandowsky *et al.* 2018). Frequently, it has been observed, speakers from this discourse will switch from one contradictory theory to another, lending the

experience of arguing with them a ‘whack-a-mole’ character: no decisive argumentative victory is achieved, since there is not a consistent set of premises which can be defeated by any single argument (Klein 2015). This use of ‘denialism’ may be said to be most justified here, since what this captures is a sense of the intellectual illegitimacy of this discourse: it is irrational in denying not only the strength of argument arrayed against it but its own inconsistencies, seemingly resulting in the attempt by those who make these arguments to deny their perception of the truth even to themselves (Diethelm and McKee 2009, p. 3, Oreskes and Conway 2012).

A further support for the use of ‘denialism’, and the status of intellectual illegitimacy associated with it, is given by the overwhelming rejection of its arguments by established scientists, on the grounds of irrationality and ignorance. An illustrative example is given by Bjørn Lomborg, a figure who has established a career as a public intellectual through arguing that the warnings and concerns of environmentalists are an exaggerated ‘Litany’ without basis in fact (Lomborg 2001, p. 3). A literature review of the reception of Lomborg’s *Skeptical Environmentalist* has been carried out by van den Bergh (2010). What emerges from this review is a selection of damning comments: ‘Writes things that are not in accordance with the original sources’; ‘Research is contaminated by a lack of objectivity’; ‘Selectively chooses data, illustrations and sources to support his optimistic view’; ‘Not a reliable source of information and certainly not a work of science’ [...] (Bergh 2010, pp. 35, 46, 47).

We may appreciate how such comments are representative of the scientific reception given to environmental sceptics in general, by reflecting on how Lomborg himself is celebrated by fellow environmental sceptics as a leading representative of their views. As a reflection of his centrality within this discourse, in 2003 the Competitive Enterprise Institute—a right-wing think tank whose head of environmental lobbying, Myron Ebell, has played a prominent role in undermining climate science within the administrations of both Trump and George W. Bush (DeSmog 2019a)—gave Lomborg its Julian L. Simon Memorial Award. A blessing was thus conferred upon him, since Simon is widely celebrated within this discourse in heroic terms as ‘the doom-slayer’, after winning a bet with the environmentalist Paul Ehrlich that the price of a basket of metals would decline over a decade, rather than increase (Moore 1998, Sabin 2013).

Elite project or social movement

Regarding the question of who is involved in this discourse (and, with that, what underlying motives they may have), a repeated theme in analysis is the division between a vanguard which creates this discourse and a mass audience which is influenced by it. This is often depicted as a binary relationship between sections of the elites and the public; but it may also be conceived of as a tripartite relationship, between self-interested elites who sponsor this discourse, ideologues who spread its ideas out of personal conviction (this group may span both elites and the public), and receptive members of the public who come to subscribe to it (e.g. Hamilton 2014).

Five classes of agent are identified in this literature who together might be banded as comprising elites: dissenting scientists, business lobbies, and right-wing politicians, think tanks, and media outlets (Björnberg *et al.* 2017, pp. 235–6). For some, environmental scepticism is an exclusively elite project (and nurtured overwhelmingly by Anglo-American elites, at that (Anshelm and Hultman 2014, p. 85)). The elites' role is depicted as leading this discourse and shaping its rhetoric, functioning as a 'denial machine' (Dunlap 2013) that 'generates' denial both among the public and other members of the political elite (Björnberg *et al.* 2017, p. 237). The motivation driving this project has been identified, at its narrowest, as the defence of particular industries (especially those associated with fossil fuels) under threat of environmental regulation (e.g. Russell and Blackburn 2017). Attention has been drawn in particular to the financial commitments which various companies have made to fossil fuel infrastructure; a rapid transition to renewable energy would render these stranded assets, and force those who have invested in them to 'eat that cost' (McKibben 2010, p. 55). More widely, it is attributed to a general right-wing ideology which opposes the regulation of corporations and wealthy individuals on principle (e.g. Elsasser and Dunlap 2013, Hess 2014).

Dunlap and McCright's (2015) name for this project is the 'denial countermovement', a phrase which emphasises their placing of it in the context of a 'wider conservative countermovement against the progressivism of the 1960s' (Dunlap and McCright 2015, p. 305), an analysis echoed by Killingsworth and Palmer (1992, p. 40). In this analysis, from the early 1970s this counter-movement has incorporated corporate lobbying against environmental regulation; Oreskes and Conway (2012) have detailed how polluting industries have copied techniques pioneered by tobacco firms to

cast doubt on the science that would underlie interventionist public policy. Freese (2020) widens this panorama, finding parallels between the attempt to sow doubts about the dangers of fossil fuels and corporate campaigns to defend dangerous or immoral industries under threat of regulation, going all the way back to the slave trade; among the campaigns she highlights are defences of radium consumption, cars with safety flaws, leaded petrol, and the investment products that triggered the 2008 financial crisis. Such environmental disinformation is said to have dipped in the 1980s, but rose sharply from the early 1990s; this has been characterised both as a response to the growing prominence of climate change as a political issue (Dunlap and McCright 2015, p. 300), and as meeting the conservative movement's need for a replacement for anti-communism as an antagonistic focus, following the end of the Cold War (Jacques 2009, p. 32, Hamilton 2010, p. 98).

For Jacques (2009, p. 23), the 'counter-movement' works hard to obscure the fact 'that skepticism is organized'. In this respect, several analysts focus on the role played by networks of conservative think tanks (CTTs) (Rowell 1996, Beder 2001, Jacques *et al.* 2008, Dunlap and Jacques 2013), the 'connective tissue' which keeps this movement together and broadens its reach (Dunlap and McCright 2015, p. 312). Wealthy industrialists (such as Exxon, and the Koch brothers) have been able to keep their influence 'cloaked' (Dunlap and McCright 2015, p. 312) by funding CTTs to promulgate anti-environmentalist arguments on their behalf. Their effectiveness has been enhanced by the adoption by CTTs of the form of ideologically-centrist policy research institutes, or even seemingly environmentalist pressure groups, which belie their anti-environmentalist orientation (Rowell 1996, Helvarg 2004, Mooney 2005, Oreskes and Conway 2012).¹⁰ The establishment of a multiplicity of CTTs helps to create an impression of an alternative intellectual ecology to that of the environmental science located within universities (Frank 2004, p. 195). In practice, these networks are self-referential, funding and endorsing one another, meaning that what appears as a vibrant ecology of independently-asserted ideas is more like an ideological monoculture, whose funding can often be traced back to the same sources (Rowell 1996, Mooney 2005, Jacques *et al.*

¹⁰ Examples range from names which denote nothing in terms of ideology, such as the Heartland Institute; to those which suggest a neoliberal political orientation but within a positive frame, such as the Competitive Enterprise Institute; to names which explicitly deny their anti-environmentalist orientation, such as Coalition of Responsible Environmentalists, Responsible Industry for a Sound Environment, Information Council for the Environment, and the Advancement of Sound Science Coalition.

2008). For Freese (2020, pp. 241–2), this dynamic, by which think tanks work on behalf of corporations (whose identities, as funders, are frequently kept secret), promotes a sense of authorial impersonality which may inhibit the feeling of moral accountability among those who work for them, in turn enabling them to advocate more extreme views.

Regarding the public's role in participating in environmental scepticism, this has been analysed as ranging between being passively receptive to enthusiastically reproducing it from the bottom up, with their attitudes ranging between reservation towards and dismissal of environmental science (Van Rensburg 2015, p. 9). This range of attitudes is reflected in an analysis of 'Global Warming's Six Americas' (Maibach *et al.* 2009), which segments the American public into different groups along a continuum of views about climate change. At the most sceptical end are the 'dismissive' (who are certain it is not happening, and suspect it is a hoax), and the 'doubtful' (who believe that if climate change is happening, it is not caused by humans and not something to worry about); in the middle ground (who may be receptive to environmental scepticism) are the 'cautious' (still making up their minds) and the 'disengaged' (who say they know nothing about the issue). Similar results have been obtained from an analysis of 'five climate change publics' in the United Kingdom (Crawley *et al.* 2020). Focusing just on the undecided and denier end of the spectrum, views tend to split not just on what they believe but on how certain they are (Maibach *et al.* 2009, Whitmarsh 2011): the more intense someone's rejection of environmental science, the more certain they are that they are right.

As for how members of the public come to hold environmentally sceptic views, one group of theories relates to the influence of elites. McCright and Dunlap (2011c, p. 161) refer to the 'elite cues hypothesis', whereby 'people often rely selectively on information from partisan leaders whom they trust'. Focusing not on convinced environmental sceptics but a broad middle ground of the public (the 'cautious' and 'disengaged'), another approach is to see organised climate denialism as sowing doubts among the public by activating people's natural propensity not to believe unsettling news (e.g. Hamilton 2011, p. 36). On this theme, Ferkany (2015, p. 710) has drawn a distinction between a 'motivated denial' among elites, and a 'naïve denial' within the public, related to their ignorance about the evidence and authority of mainstream climate science. While Haltinner and Sarathchandra (2020) link the extent of climate scepticism among the public to the influence of elites, meanwhile, they suggest that the constituency of sceptics among the public should not be understood as a monolithic group, mirroring

the counter-movement's absolutist opposition to environmental regulation at a popular level: among the public, climate scepticism may go hand in hand with support for diverse forms of environmental protection.

Other theories interpret environmental scepticism among the public (especially at the 'dismissive' end of the spectrum) as belonging to a wider growth in right-wing populist movements, often brigaded under the heading of the 'alt-right'. In this sense environmental scepticism is seen as a phenomenon both shaped and mobilised from above, *and* fuelled by sentiments originating from below. The use of 'backlash' to describe anti-environmentalism—as in 'green backlash' (Rowell 1996, Switzer 1997) or 'brownlash' (Ehrlich and Ehrlich 1996)—relates this sentiment to a wider conservative backlash against the progressivism which came to ascendancy in the 1960s, emblematically represented in the US by the civil rights movement and counter-culture (Frank 2004, Perlstein 2009, Hamilton 2011). In the 1970s and 1980s, where anti-environmentalism became incorporated into these American politics of backlash, it was centred around protests against the idea of state intervention in the use of land and natural resources (manifesting in such forms as the 'Wise Use' movement) (Brick 1995, Helvarg 2004). Examining such forms of 'environmental opposition', Switzer (1997) found evidence of grassroots support, animated by concerns that environmental regulation threatened jobs in industries such as logging; and more widely reflective of a cultural antagonism felt by rural communities towards an environmental movement perceived as being made up of middle class urbanites. Brown and Herndl's (1996) study of the environmental scepticism of the 'ultraconservative' John Birch Society analysed its rhetoric as that, not only of radical individualists, but of a community which feels antagonistic to a cultural mainstream which subjects it to 'social and political marginalization' (1996, pp. 220, 223). Since the 1990s, as climate change has risen to prominence as an environmental concern and become firmly identified as a progressive cause, so has climate scepticism become an increasingly constitutive feature of right-wing identity (McCright and Dunlap 2011c, McCright *et al.* 2013, Dunlap *et al.* 2016). Such a political identity has been understood as being often mutually constitutive with a social identity (frequently white, wealthy, and male—'Cool Dudes', as McCright and Dunlap (2011b) name them) whose status may be perceived to be threatened by environmental science and its associated policy responses. Most recently, climate denialism has been associated with support for right-wing populism (Trump in the US and Brexit in the UK

(Norris and Inglehart 2019)), and for far-right parties in Germany (Forchtner *et al.* 2018) and Norway (Krange *et al.* 2019). It has been said that while ‘Not all climate sceptics are part of the “alt-right” [...] everyone in the alt-right is now a climate sceptic’ (Runciman 2017).

A note on nomenclature

At this stage, it would be useful to establish my own position on how to refer to this discourse: throughout this thesis I will use the term ‘environmental scepticism’. My reason for adopting the term ‘sceptic’, even while rejecting the claim that this represents genuine scepticism, is, as noted by others (Jacques 2009, p. 1, Van Rensburg 2015, p. 9), that this has pragmatic advantages. On a more superficial level, I considered during my research that I would stand a greater chance of securing interviews with exponents of this discourse if I used a term which they would recognise themselves. On a deeper level, I hoped that working with a term used within this discourse, rather than a pejorative term (such as ‘denialism’) which dismisses it as being entirely illegitimate, would contribute to my aim of understanding what it means for those who subscribe to it.

1.2 Three sociological theories

Much of the analysis of environmental scepticism, while empirically detailed, remains in a descriptive register. As McCright and Dunlap (2010, p. 101) write, while such papers help to establish the ‘what’ and ‘how’ of resistance to the limits thesis, ‘only rarely do they delve deeply into *why* it has happened’.

On one level, this question seems straightforward enough: the ‘why’ of this resistance can be attributed to the simple economic self-interest of privileged elites. From a wider, sociological perspective, the question becomes more complicated. The limits thesis—not least as represented by climate change—concerns more than just a risk to the profitability of some industries, or economic status of some classes; it presents itself as a matter of life and death, of the survivability of familiar patterns of living and ultimately of humanity itself. From this perspective the irrationality of environmental scepticism comes to the fore. We are presented with a mystery: granted that powerful economic agents and

classes would have a narrow self-interest in opposing environmental regulation, why hasn't the 'safety of the people' trumped this and ensured the limits thesis was acted upon?

Significant analysis on this deeper level has taken place within environmental sociology, centring on a small number of key theories or schools of critique. Three are presented here: anti-reflexivity; eco-Marxism; and green political critique.

The Anti-Reflexivity Thesis

The Anti-Reflexivity Thesis (ART), developed by Riley Dunlap and Aaron McCright, exists as a critical response to another theory, that of 'ecological modernisation' (EM). EM is grounded in Habermas's (1975) analysis of the legitimisation crisis of the capitalist state (Fisher 2002). Ecological limits, Habermas had noted, posed a potentially fatal challenge for the capitalist system: on the one hand, 'ecological balance designates an absolute limit to growth', but on the other, 'Capitalist societies cannot follow imperatives of growth limitation without abandoning their principle of organization' (Habermas 1975, pp. 41-42). Theorists of EM, however, have seen a way for capitalism, if not to resolve this contradiction, then to evade it indefinitely. For Beck (1992) the key concept is 'reflexive modernisation': the process by which society can utilise both the agency of a critical public and the technological innovations of capitalism itself to create an environmentally sustainable form of capitalism.

Dunlap and McCright's ART works with the terms of EM theory, but seeks to address its shortcomings—not least, its failure to account for the activism of environmental sceptic groups. Where reflexive modernisation identifies the environmental movement as an agent through which society is able to reflect on the unsustainability of an earlier stage of modern development, anti-reflexivity identifies a 'coalition of corporate interests and political conservatives' which have formed in response, precisely 'to defend the current economic system of production and its pursuit of endless growth from critics' (Dunlap 2014, p. 1). Where reflexive modernisation identifies 'impact science' (scientific research on the impacts of technology) as a core element of modernity's capacity to reflect on the unsustainability of its economic structures, ART focuses on the 'denial counter-movement' as being centrally preoccupied with undermining this branch of science, thereby interfering with society's capacity to reflect on its own self-generated flaws.

Ultimately, Dunlap warns, this interference with critical self-reflection means society risks losing touch with reality, in turn threatening its long-term survival (Dunlap 2014, p. 3).

The ART has been used to inform statistical analysis, for example, of views of the American public; McCright (2016) has found a correlation between support for groups ‘defending the industrial capitalist system’ and ‘skepticism that the system is causing significant problems necessitating governmental action’, and more specifically between conservative political identity and distrust in impact science. This result has been advanced as ‘support for the Anti-Reflexivity Thesis’, given the ART ‘attributes conservatives’ [...] denial of anthropogenic climate change [...] to their staunch commitment to protecting the current system of economic production’ (Dunlap 2014, p. 1).

Notwithstanding the robustness of this research, it is in this attempt to support the ART through empirical analysis that a certain conceptual thinness in this theory is revealed. On the one hand, the proponents of the ART are at pains to highlight the important role of ideas and ideology in their theory (e.g. McCright and Dunlap 2010, p. 110). Opposition to environmentalism is not simply the product of economic self-interest on the part of the heavily polluting corporations that would stand to lose the most from effective regulation, they make clear. Pointing, to the avowed enthusiasm for anti-environmentalist arguments on the part of those who staff conservative think tanks, McCright and Dunlap (2010, p. 111) state that the ‘evidence suggests that conservative movement opposition to climate science and policy has a firm ideological base that supersedes the obvious desire for corporate funding’.

On the other hand, no explanation is provided within ART for *why* those who support this counter-movement hold the ideas they do. Correlating conservative political identity with distrust of environmental science does not tell us very much, if the latter has already effectively become a feature of the former. Granted that anti-reflexivity is about ‘a reactionary attempt to reassert the industrial capitalist order of simple modernity’ (McCright and Dunlap 2010, p. 110)—and is thus more than just the economic self-interest of wealthy individuals and corporations in avoiding environmental taxation and regulation—then what explains why this is such an appealing cause for some people? Within this approach to environmental sociology this question, belonging as it does to the realm of subjective meanings, must remain a mystery.

Eco-Marxist critique: Ecological Rift Theory

Another approach to environmental sociology which explicitly differentiates itself from EM is the eco-Marxist critique associated with the journal *Monthly Review*, notably comprising John Bellamy Foster, Brett Clark, Richard York (e.g. Clark and Foster 2009, Foster *et al.* 2010, Clark *et al.* 2019), and Paul Burkett (e.g. Burkett 1999).

Foster *et al.* (2010) see environmental sociology as dominated by two overarching approaches, with ecological modernisation as one, and a set of approaches they brigade under the heading ‘radical ecologies’ as the other. Under this latter heading they include McCright and Dunlap’s Anti-Reflexivity Thesis; but for the most part they are referring to approaches which are explicitly Marxist in orientation, or which otherwise do more explicitly to call capitalism as a whole into question. In this sense, such theories offer a different form of explanation for the resistance to the limits thesis. Rather than focusing on the influence of an anti-environmentalist counter-movement, they focus more on a fully sociological account of immanent social logics and pressures. That is to say, their essential argument is that capitalism structurally requires endless growth, and is thus fundamentally incompatible with the limits thesis; resistance to the limits thesis therefore arises not simply from the active opposition of anti-environmentalists who would stand to lose from an alternative economic system, but from the capitalist system as a whole. Under the cultural hegemony of this system, capitalism appears as a seemingly unquestionable, quasi-natural reality. Thus if capitalism and environmental limits are perceived to be incompatible, it is social consciousness of the latter which tends to be repressed so as to preserve the existence of the former.

While not the only form of structural critique of the environmental unsustainability of capitalist hegemony, the form articulated by the *Monthly Review* (MR) school is the most theoretically powerful, in the sense in which it attempts to fully integrate environmentalist and Marxist streams of critique.¹¹ The key to this theoretical integration lies in this school’s focus on Marx’s analysis of ‘metabolic rift’, by which

¹¹ Other notable theories—which for Foster *et al.* are hampered by keeping their critiques of industrial unsustainability to some degree separate from their analysis of capitalism—include Schnaiberg’s ‘Treadmill of Production’ theory (Schnaiberg 1980) and O’Connor’s ‘second contradiction of capitalism’ (O’Connor 1991). More recently, another prominent contribution has come in the shape of Moore’s analysis of capitalism’s reliance on ‘Cheap Nature’ (Moore 2015).

industrialism led to the impoverishment of the soil (by removing the human population—and the use of their waste as fertiliser—from the land) and the overloading of nature with pollutants (Burkett 1999, Foster 1999, 2000). For the MR school this forms an essential element of Marx's critique of capitalism: it is the system's relentless drive for accumulation which imposes its dominion, simultaneously and ruinously, on man and nature. As individuals are alienated from their own creative autonomy, so is society alienated from nature. Capitalism is thus represented as the driving force of the ecological crisis—and any notion of a 'sustainable capitalism' is dismissed as a contradiction in terms. Updating and broadening what they identify as Marx's original analysis, Foster *et al.* refer to the sense of planetary crisis reflected in the limits thesis as 'the global ecological rift'.

At the heart of the MR school's theory is a focus on the systemic requirement of the capitalist system for endless accumulation (Magdoff and Foster 2011), from which position it argues that to politically enact the limits thesis must necessarily be to abolish capitalism. Such a revolutionary course of action is ruled out of consideration, it suggests, by elites who collectively establish a restricted sense of 'political reality'. In this sense the MR school goes beyond identifying the lobbying of polluting companies as the explanatory factor in resistance to the limits thesis. Rather, it suggests that social consciousness of the essential issue (and potential solution) is occluded by the class interests of those who have power within the current system. In this sense it goes some way to explaining the apparent irrationality of the political in ignoring the limits thesis: drawing on Mills' sociological analysis of nuclear brinkmanship during the Cold War (Mills 1956), it analyses the political discussion of environmental risks as a form of 'crackpot realism' (e.g. Foster *et al.* 2010, p. 27)—earnest, serious-sounding, full of targets and resolutions, but quite irrational in denying the scale of effort required, and the fundamental impossibility of sustaining indefinite growth on a finite planet.

While the MR school argues compellingly that capitalism is intrinsically incompatible with the limits thesis, all the same it is possible to view its complete integration of a contemporary ecological perspective into Marxist theory as a theoretical weakness as well as a strength. We can perhaps appreciate this best by considering Marxist visions of an alternative to capitalism. As represented explicitly by contemporary 'Promethean socialists' (e.g. Phillips 2015, Bastani 2019—see Chapter 3 for further discussion), but as also reflected in the writings of previous generations of socialists

(Pankhurst 1923, Trotsky 1974 [1926]), there is a strong current of radical thought which conceives communism as a society in which technological progress will have abolished scarcity, enabling universal lifestyles of abundance. Foster and others have been at pains to argue against contemporary Promethean socialism as being ecologically illiterate (e.g. Foster 2017); but these very criticisms of mooted socialist systems as also being unsustainable suggest both (i) that the limits thesis is, after all, being invoked independently of the Marxist critique of capitalism; and (ii) that resistance to the limits thesis may not be fully explained by the defence of capitalism.

This line of criticism is further strengthened by asking: if the defence of capitalism *is* the fundamental explanation for resistance to the limits thesis, then what explains the successful defence of capitalism? If the answer is that capital elites so shape public discourse that the public are left with a false consciousness, and thereby do not understand that their true interests lie in policies that would protect themselves and future generations, then—as with theories of capitalist hegemony more widely—that still leaves mysterious how the (eco)socialist vanguard has successfully asserted its intellectual independence. If, meanwhile, the answer is in part that the public more broadly have invested themselves in the capitalist system in the pursuit of rising wealth and consumer goods, then this suggests that what is being defended is not only capitalism (a system for the enrichment of the capitalist class) but a popular vision of material progress.

Green critiques of the liberal capitalist state

An approach which not only opposes ecological/reflexive modernisation and explicitly critiques capitalism, but also mounts a critique of the idea of material progress, is the green political critique of the liberal capitalist state associated with political scientists and sociologists such as Robyn Eckersley (1992, 2004), John Dryzek (1996), John Barry (1999), Daniel Hausknost (2014, 2017, 2019), and Andrew Dobson (2003). What could be said to define a specifically green form of thought, as opposed to a more general orientation towards environmentalism, is an overarching critique of ‘man as despot’ (Passmore 1974) regarding nature, a conception generally associated with the cultural and political traditions of the West: feeding into this overarching critique are critiques of Christianity (White 1967), patriarchy (Plumwood 1993), and the state (Bookchin 1995).

While all forms of green thought thus share reservations towards power and hierarchy, and thus bear a ‘general anarchistic complexion’ (Barry 1999, p. 80), the green political thought developed by Eckersley and others is a form of political realism: its basis is a recognition that the kinds of urgent changes required by the limits thesis imply the need for winning political power in the here and now, and thereafter utilising the organisational capacities of the state. In that they are interested in state power this group of theorists are also interested in explanations for why states have not implemented the limits thesis to date.

In their account, Hunold and Dryzek (2005) draw on the analysis both of eco-Marxism and the Habermasian analysis of the state which lies behind ecological modernisation. They view the modern liberal state as having twin imperatives: supporting the capitalist drive for accumulation (the ‘economic imperative’), and maintaining its own authority (the ‘legitimacy imperative’). In Hunold and Dryzek’s analysis the environment will only be adopted as a contributor to state legitimacy to the extent that it does not contradict its economic imperative. Examining the paradigm example of the Nixon Administration, they see Nixon’s adoption of environmentalist reforms as a way of ‘embracing what looked like the least radical and least threatening aspect of the counterculture’, and thereby rebuilding the state’s legitimacy ‘without acceding to any more radical countercultural demands’ (Hunold and Dryzek 2005, p. 79). As the 1970s progressed, the faltering health of the US economy raised the importance of meeting the state’s economic imperative, while the rising prominence of the limits thesis established environmentalism as being antagonistic to it. Environmentalism could then only be admitted within the state’s list of priorities in a form—ecological modernisation—which did not threaten the economic imperative; which is to say, one which ignored the overall limits thesis.

For Hausknost (Hausknost 2020), drawing on the concept used to describe the apparent disadvantage faced by women in the workplace despite ostensible commitments to fairness in selection procedures, this has resulted in the ‘glass ceiling’ of the environmental state. This describes an unexplained mismatch between the commitments of states to sustainability and the inadequate actions taken to address the most serious environmental threats. Hausknost’s analysis is that, in its environmental functions, the state is indeed responding to its legitimation imperative: where there are immediate threats to human health and well-being, especially where these affect communities with

the greatest political voice, the state will act to regulate them. Where environmental protection would directly contradict the economic imperative, however, states will find excuses for inaction.

Eckersley views the contemporary liberal capitalist state as shrouding itself from that knowledge of its own vulnerabilities which could enable it to act decisively on threats such as climate change; in this way, she, too, rejects the ecological modernisers' faith in the potential for reflexive modernisation. For Eckersley (2004, p. 241) it is wrong to suggest that inaction on the limits thesis 'is merely a reflection of peoples' preferences', and thus the 'price of upholding human autonomy and tolerating moral pluralism on environmental matters'. Rather, the problem can be traced to 'liberal dogmas' relating to a modern 'atomistic ontology of the self' that shelters society's dependency on nature from itself (Eckersley 2004, p. 242).

While the green analysis of inaction on the limits thesis features powerful analysis, there are reasons to doubt it has the whole answer. We can appreciate this best by considering its suggested solutions to the problem. Often these consist in proposals (e.g. Eckersley 2004, Hausknost 2014) for democratic reforms which would in various ways empower 'the people', and thereby circumvent the control of the political system by elites. There is an assumption in such analyses both that democratic reforms will produce rational decisions (not least enacting the limits thesis) and that the people care more about sustainability than economic growth. The radical demand being made of the people in this sense is made plain by Barry and Eckersley's criticism of ecological modernism as being inadequate because 'It does not challenge [...] the idea of progress' or 'the need to address [...] overconsumption (in the North)' (Barry and Eckersley 2005, p. 262). Dobson, while a fellow green political theorist, is more appreciative of the radical nature of this demand, underlining that to argue for less consumption is to make 'a sharp break with the principles of the modern era'—and to do so 'with a series of intellectual arguments [...] that currently appear too weak to do the job required' (Dobson 2000, pp. 72, 74).

If it were the case that resistance to the limits thesis is not simply the work of elites upholding the structural requirements of the liberal capitalist order, but is more broadly based than this, then the following questions would arise. First, why is it that ideas of economic growth (or progress, or rising consumption) would override the idea of survival

as represented by the limits thesis—generally, that is, rather than as a specific defence of class interests by elites who currently enjoy privilege within the capitalist system? And secondly, what is it about green thinkers which has enabled them to ‘break with the principles of the modern era’ and embrace the limits thesis? What is preventing politics as a whole from adopting this view?

1.3 Psychological and ideological explanations

The sociological theories discussed above tend to see elites as being intimately involved in the social resistance to the limits thesis, and yet understand this as being a more complex and diffuse phenomenon than the work purely of those elites themselves. Not least, these theories attempt to reckon with how it is that in democracies the interests of an elite could prevail over those of society as a whole. For Anti-Reflexivity theorists, elites who stand to lose from environmental regulation implement techniques designed to interfere with society’s ability to critically reflect on its unsustainability, and thereby serve to paralyse the political sphere from responding to social concerns. For eco-Marxists, the internal logic of the capitalism system, by which it demands open-ended accumulation, conditions the socially-understood boundaries of political reality, meaning the limits thesis remains almost literally unthinkable within any discussions of political power. For green political theorists, the legitimacy of the liberal state is bound up with dogma concerning individualistic freedom; as the limits thesis would contradict such dogma it is exiled to the margins of political debate, without such explicit exclusion ever having to be actively imposed by elites themselves.

What these theories do is widen the sphere of explanation. Responsibility for the limits thesis is not focused on its explicit opponents, the environmental sceptics, alone. Now the sphere is widened to include the general public (since, after all, the limits thesis has been resisted in mass democracies)—but with the argument that their voice has been shaped or marginalised by wider social forces, of which elites are in some sense the guardians.

This sociological approach still leaves us with a pair of analytical gaps: (i) a gap between the structural requirements of the socioeconomic system and the belief exhibited in them by the individuals who defend that system in argument; and (ii) the gap between a

material interests-based explanation for the elite-led anti-environmentalist countermovement and an explanation for the views of those among the public who follow them. What needs to be investigated is how individuals internalise an understanding of reality which may run counter to their own interests (and how it is that some are able to intellectually liberate themselves from socially-dominant views). The need for explanation here includes but goes beyond the mentality of the public in internalising a worldview promulgated by others. It extends also to the mentality of environmental sceptics in resisting the weight of climate science: given environmental breakdown would be disastrous for all, including elites, why should even they continue to uphold an unsustainable system?

These questions demand to be tackled on another level of analysis, examining how individuals interpret the world, often focusing on a psychological need for a sense of meaning as a determinant for our beliefs. Here, two approaches to beliefs regarding environmental threats are reviewed: theories on the psychology of climate change denial; and explanations of environmental scepticism based on a defence of a dominant social ideology.

Psychology of climate change denial¹²

The denial of information we are afraid to confront is a widely-researched phenomenon. Surveying dozens of papers across several disciplines, Golman *et al.* (2017) itemise numerous modes and motivations for self-deception. Denialism has been found not just to be an individual property, but also to operate at a social level. Zerubavel (2006) has analysed cases where a conspiracy of silence can take hold within a society that shares a collective desire to repress something; denial then becomes self-fuelling, as the communal process of denial itself becomes a guilty secret to be repressed. Diamond has speculated that such widespread denialism may have been a contributory factor in the collapse of historical civilisations (2005).

More specifically, denial of climate change has been the subject of numerous

¹² Notwithstanding my commitment to using the term ‘environmental scepticism’ to refer to the discourse of those who reject environmental science and policy, in this section I will use the term ‘climate denial’ since the context for this discussion is the wider psychological study of denial.

studies. Adams (2015) comments: ‘Psychologists are identifying countless psychological “barriers” that obstruct behaviour change, despite knowledge about anthropogenic ecological degradation, that include perceptual, cognitive, emotional, interpersonal and group processes.’ For Marshall, climate change denial is a social phenomenon, in which ‘we actively conspire with each other, and mobilize our own biases to keep it perpetually in the background’ (2014, p. 228). For Washington and Cook (2011, p. 100), too, this is a joint enterprise, the problem being ‘not that we don’t “talk” about climate change, but that we *deny our denial of it*.’ With climate scepticism increasingly becoming a feature of conservative political identity (McCright and Dunlap 2011a, Häkkinen and Akrami 2014) and thus a constitutive feature of the politically-polarised circles in which people move, Kahan *et al.* (2012, 2013) have analysed denial as a rational response on an individual level—in the sense of promoting accord with one’s ideologically like-minded identity group. Denialism has been attributed to a cognitive dissonance driven by the incompatibility of suggested environmental policies with current or expected consumer lifestyles (and thus also, on the part of elites, with conventional electoral politics) (Stoll-Kleemann *et al.* 2001). For Norgaard (2011) denial is fuelled by the presentiments not only that climate change will, in the absence of radical action, be catastrophic, but that ‘our existing political structures are not up to the task’ (2011, p. 224). In these circumstances ‘people “choose not to choose” because they feel disempowered and ineffective’: ‘apathy is a rational response if there is nowhere to turn’ (2011, pp. 205, 225). The focus of responsibility for inaction on climate change is thus widened beyond the work of elites to include ‘the public [who] on a collective level actively resists available information’ (Norgaard 2011, p. 12). For Friedrichs (2011, p. 475), ‘there is a twisted kind of rationality to denial’: with climate change understood to be both an existential threat and yet intractable, to ignore the problem for as long as one can at least reduces the experience of anguish for the moment. Haltinner and Sarathchandra (2018) apply insights of behavioural science to suggest that climate denial manifests the ‘ostrich effect’, whereby the fear of learning about a problem leads people to actively constructing alternative, safer, narratives. Freese (2020, pp. 247–8) provides a reading of a particular form of denial specific to the anti-environmental partisans of the denial counter-movement: she suggests that when portraying environmentalism as a self-serving industry, lobbying for corporate handouts and seeking to confuse the public with lies, they are projecting their own behaviour onto their opponents; this helps to neutralise their own moral self-appraisal, and provides them with an energising sense of righteousness.

One of the most potent theories which could be applied to the psychology of climate change denial is Terror Management Theory (TMT). TMT has been developed from the work in the early 1970s of the cultural anthropologist Ernest Becker. Becker (2011 [1973]) advanced the hypothesis that the uniquely human awareness of mortality activates a psychological need for immortality belief-systems, which in history has given rise to religions and the production of culture.¹³

TMT posits a reciprocal relationship between awareness of mortality and cultural identification. Reminders of one's mortality trigger a defensive attitude towards one's social identity and the culture to which one feels a connection; while criticisms of and threats to one's cultural identity increase anxiety about mortality. In recent years TMT has begun to be applied explicitly to account for climate change denial (Crompton and Kasser 2009, Dickinson 2009, Hamilton and Kasser 2009). Dickinson (2009, p. 34) suggests that explicit mention of death in connection with climate change may trigger 'proximal defences', whereby people seek to deny the impact of such thoughts by disbelieving in climate change or projecting its impacts far into the future. She cites a study (Lowe *et al.* 2006) which found that after watching *The Day After Tomorrow*, a 'cli-fi' film set in a world devastated by climate change, subjects were *less* likely to believe in the likelihood of extreme weather events due to climate change. Where anxieties about death are more implicit, TMT suggests this may trigger 'distal defences', by which one seeks to banish insecurities about one's mortal self by bolstering one's identification with a greater 'cultural self'. Dickinson (2009, p. 34) notes that 'in Western society [this] could mean counterintuitive increases in status-driven consumerism, materialism, and other behaviors that increase carbon emissions': she finds as a 'startling example of this [...] the "Drill, baby, drill" chant that erupted at the Republican National Convention' in 2008.¹⁴

Defence of ideology

Another form of analysis interprets environmental scepticism (at both elite and popular levels) as a defence of ideology. Ideology here represents a set of ideas which both

¹³ Becker's thought is discussed further in Chapter 2.

¹⁴ More generally, Kasser and Sheldon (2000) have argued that 'people's tendencies toward materialism and consumption stem in part from [...] the fear of death', while Sheldon and McGregor (2000) have suggested a link between 'materialistic values' and a tendency to use environmental resources unsustainably.

corresponds to the social circumstances of particular groups, and defines social groups by virtue of the common set of ideas they share. It describes sets of ideas as both intellectual (thus assented to and reproduced within the minds of individuals) and social (thus capable of being shaped and transmitted within a society). It allows us to pursue analysis all the way from an overview of social logics into the minds of the individuals who interpret them, thereby bringing into the focus the ‘positive’ motivations for environmental scepticism. We may see this as the other side of the coin to the ‘negative’ motivations obtained by analysis of the psychology of denial: in some cases (as discussed above), what is prompting the denial is precisely a perceived threat to the future status and viability of a social order conceived in ideological terms.

An illustration of this mode of analysis is given by Collomb (2014). In his analysis ‘the American way of life’ is itself an ideology, infused by its most partisan defenders with both a ‘small government’ political doctrine and a quasi-religious belief in an American national destiny of ‘permanently expanding economic prosperity’. For those who strongly identify with this outlook, battling against climate science—and the political demands for radical state intervention and economic degrowth associated with it—is ‘a matter of ideological survival’ (Collomb 2014, p. 1).

A central touchstone in this field is Dunlap and Van Liere’s (1984) analysis of a ‘Dominant Social Paradigm’ (DSP) in the United States. They present an overview of analyses which attribute lack of progress towards environmental sustainability in the United States to that ‘society’s traditional values’—‘individualism, materialism, limited government, and progress’ (e.g. Whisenhunt 1974, Christensen and Nørgard 1976, Harblin 1977). In particular, Dunlap and Van Liere draw attention to Pirages’ (1977, p. 6) concept of the ‘dominant social paradigm’ (DSP), a constellation of beliefs which ‘constitute a society’s basic “worldview”.’ Drawing on a range of analyses they suggest the following key features of the DSP in the US:

- (1) commitment to limited government, (2) support for free enterprise, (3) devotion to private property rights, (4) emphasis upon individualism, (5) fear of planning and support for the status quo, (6) faith in the efficacy of science and technology, (7) support for economic growth, and (8) faith in future abundance. (Dunlap and Van Liere 1984, p. 1015.)

They comment (1984, p. 1015): ‘we believe that these eight factors represent the critical DSP dimensions which have been widely implicated as major sources of our nation’s

environmental problems’.

Jacques (2006, 2009, 2012) has built on this concept to construct a theory in which environmental scepticism represents ‘the rearguard of modernity’. He argues it is possible, by attending to the arguments of environmental sceptics (especially their insistence that the ‘industrial way of life is non-negotiable’), to discover a ‘reverse bridge’ to their underlying motives (Jacques 2012, p. 15). These motives he identifies with a defence of the DSP—only he redescribes Dunlap and Van Liere’s eight factors as the core values of ‘Enlightenment liberalism’ (Jacques 2006, p. 92). In broadening the definition of these values beyond a specifically American context, he is able to talk about not just a national DSP but ‘world dominant social values and institutions that guide the global accumulation and concentration of power’ (2006, p. 78). While clear that environmental sceptics are defending the economic interests of a privileged (international) class, he also recognises that they are defending an entire worldview which they believe to be right and good:

skeptics believe that modernity has arisen from the domination of nature, and that modernity has provided humanity with the progress and affluence our pre-modern predecessors wished they could have had while they led miserable lives. They see modernity as a fantastic success story, including its effects on the environment which they believe are getting better all the time. (Jacques 2006, pp. 81-82.)

Jacques is equally clear that this worldview is morally corrupt. At its heart, he sees an ethic of ‘deep anthropocentrism’ which ‘believes humanity is utterly independent of nonhuman nature’: this dichotomous ontology, echoed by the divisions within the DSP between “‘savage’ and civilized, wild and rational’, is what he sees as allowing ‘for the simultaneous exploitation of both non-human nature and non-dominant human groups’ (Jacques 2006, p. 85).¹⁵

For Jacques it is important not to become preoccupied with the explicit content of environmental sceptics’ arguments; unfortunately ‘academics have been overly concerned with the contrarian claims themselves, leaving the *meaning* of skepticism relatively underdetermined and under-analyzed’ (2006, p. 77). To understand the real meaning of environmental scepticism, he argues, one needs to understand it in the context of

¹⁵ This analysis is echoed by Moore’s critique of ‘Cartesian dualism’ (Moore 2015).

ideological contestation. Environmentalism implies a *new* social paradigm, one ‘that sees humanity as a civic member with rights and obligations to the community of life on earth writ large (nature in an international/global sense)’. This ‘is pressuring the modern frame of the world that is embodied in the DSP, and skepticism has been marshalled from contemporary conservatism to defend it’ (2006, p. 91). Thus it would be wrong to understand environmental sceptics as ‘just defending business’; and thus we can understand what ties the denial counter-movement of the elites with support for environmental scepticism among the public: it is an entire ‘structural world order’ which is being defended (2006, p. 93). The values which sceptics identify with and seek to defend are ‘industrial power, Western modernity, and the ideals of Western progress’, all of which they perceive (correctly, in Jacques’ estimation) environmental science as opposing (2012, p. 11). Or as he puts it: ‘The climate denial counter-movement comes from [...] the defensive fear that the possessive individualistic ontology of the West lies uncomfortably in the guillotine’ (Jacques 2012, p. 15).

Similar analysis is presented by Anshelm and Hultman (2014) in their work on the links between environmental scepticism and the defence simultaneously of modernity and masculinity—the latter a link also picked up by others in exploration of the misogynistic aspects of this discourse (e.g. Gelin 2019, O’Brien 2019). The Swedish climate sceptics they examine are almost all men, most in later life, generally firm believers in capitalist markets, and often engineers or connected to circles of business, science, and technology research. Perceiving climate policy as implying radical challenges to the industrial organisation of society, these figures are drawn to climate scepticism as a means of defending an ‘industrial society in which they had invested their whole lives’ (Anshelm and Hultman 2014, p. 92). In this sense, they should not be dismissed as simply irrational or wicked: in defending industrial modernity ‘they are also claiming to save our civilisation’, and with it expectations of human welfare advancing into an open-ended future, in lockstep with technological progress (2014b, p. 93).

This is linked to a defence of masculinity in two ways. In an immediate sense, it is related to a nostalgia for an era in which the idea of material progress, and the male-dominated industries which were seen as embodying it, went largely unquestioned. In a deeper sense, Anshelm and Hultman draw on the work of Merchant (1979) in depicting a masculinist element—in which nature is seen to be passive matter to be exploited for human ends—to the modern worldview, going back to the scientific revolution of the

seventeenth century. For those heavily invested in a materialistic idea of scientific progress (for example, having spent a career in industry), this masculinist element may become deeply incorporated into their individual sense of self-worth. Environmentalism, in asserting the independent reality of nature (meaning it presents limitations to human exploitation, which cannot simply be solved), may then trigger a sense of personal resentment among those who feel their masculinity being undermined.

Hamilton (2010, 2011), similarly, presents environmental scepticism as a defence of Western modernity. From its beginnings, the contemporary environmentalist movement has been seen to ‘destabilize the ideas of progress and mastery of nature, which are traditionally understood as the basis of civilisation and “the American way of life”’ (Hamilton 2011, p. 34). That we have already destabilised the global climate beyond our control now ‘drives a dagger into the heart of the modern understanding of the human being, that of world-maker, the Enlightenment subject who creates the future of the world’ (Hamilton 2011, p. 38). In this way, the environmental worldview implies ‘the end of humanism’ and its ‘elevation of human concerns and human reason to primacy’ (Hamilton 2011, pp. 37–8). Climate scepticism is thus presented as an understandable, but still deplorable, preference for the ‘benign fiction’ that modernity could continue, to the truth.

An analysis which, while supportive of the others presented here, is in some degree of tension with them is provided by Lejano (2019). For Lejano (2019, p. 416) ideology is essentially a matter of a narrative about a social group’s place in the world, where ‘Narrative and group share a two-way relationship: the narrative creates the group, and the group creates the narrative.’ In this analysis climate scepticism has become one among several issues (gun control, illegal immigration, gay marriage) to be woven into a metanarrative. The main themes of this metanarrative Lejano sees as being fears of intrusion into one’s personal life, anxieties about socio-economic change, and suspicion of the foreign and unknown. In this light, Lejano finds, ‘climate skepticism is associated with a basic apprehension over loss of a familiar way of life and social order during an era when the American middle-class lifestyle is under threat. The familiar can be associated with cars, industry, consumption, development—all intimately linked with a carbon-centered economy’ (Lejano 2019, p. 418). What differentiates Lejano’s analysis from that provided by those such as Hamilton and Jacques is his empathy towards his subjects—those who harbour ‘aspirations for personal (and societal) progress’ (Lejano 2019, p.

419), and who resent environmentalists for seeking to bar their access to it.

1.4 Discussion: The limits thesis as a challenge to social science

Fundamentally, it is the political sphere which is responsible for failing to take the kinds of action science suggests is necessary to avoid ecological collapse. But failure attaches also to the social science analysis of this political impasse, in the sense in which it has failed to exert a decisively positive influence on it. While it might seem like a category error to hold social science partly responsible for political inaction, I would like to argue that a lack of impact may be reflective of a lack of understanding of the problem. Just as the breaching of environmental limits presents us with a social crisis, so, I would argue, society's failure to enact the limits thesis presents us with a crisis in social science.

To briefly unpack what this means, we may begin by noting Foster *et al.*'s (2010) Marxist critique of social science as a meta-discipline. Foster *et al.*'s argument is that mainstream social science has failed, in the sense in which its analysis, and the social actions to tackle environmental problems this implies, are overly modest, missing out on the radical scale of changes required to bring society back from the brink of disaster:

Social science has been in many ways hamstrung in our society precisely because its object is the social, and hence both its analysis and what is deemed acceptable/unacceptable tends to be filtered through the dominant institutions and structures of the prevailing hierarchical social order. (Foster *et al.* 2010, p. 20.)

In Foster *et al.*'s analysis social science, in its most established forms, is incapable of truly registering social crisis, since this would be to acknowledge the contingent and impermanent basis of its own institution. In this sense, Foster (2012) builds on Dunlap and Catton's (1979) diagnosis of 'human exemptionalism' as the cause of society's unsustainable condition, by perceiving the worldview of mainstream social science to be afflicted with just this same exemptionalist outlook: this itself can be diagnosed from the fact that the unsustainable basis of industrial society is occluded from analysis. In a more pointed articulation Foster *et al.* endorse J.D. Bernal's Marxist critique, according to which social science in capitalist societies is 'inevitably corrupt'. Here, a moral corruption (shrinking from opposition to social injustice) translates itself into intellectual corruption: social science abandons the rational analysis of society, lest it imply the need for radical

change, and instead degenerates towards ‘an accumulation of harmless platitudes with disconnected empirical additions’ (Bernal 1954, p. 702).

As their use of Bernal suggests, for Foster *et al.* environmental politics functions as a kind of limit-experience which serves to expose some fundamental limitations in the philosophical foundations of social science as a whole. Standing behind this line of critique are the foundational conceptions of social science/critique established by Marx—and also, in Foster’s case, by Weber. In Marx’s positive conception of social criticism, theoretical understanding and transformative practical action are umbilically linked. Under this vision, the analysis of society is nothing but criticism: an identification of faults which demand to be changed. Social analysis is thus incomplete on its own terms, never an end in itself: analysis is at one and the same time a prescription for change. The validity of analysis is then to be warranted by the effects of its prescription, having been put into action. Thus, where Marx analyses religion to be an illusion, but one necessary to the people (‘the opium of the masses’) under social conditions in which they are repressed (and subjected to the illusion that such repression is natural), the proof of this diagnosis is to be found once this repression and associated illusions have been thrown off: in a communist society, no one will any longer have any need for religion (or its surrogate, in a political religion of the state), and thus it will simply evaporate (Marx 1970 [1844]).¹⁶ The implication for eco-Marxist critique is clear: critique must not simply be critique, it must be practically-focused, geared to defining and fostering the social changes required to take society down a more sustainable path. If such critique were practically successful, then the need for it—in the shape of the social dependency on incessant growth—would disappear.

As for Weber, Foster and Holleman (2012) have drawn attention to the ecological critique at the heart of his sociological analysis of industrial society. This is most famously reflected in Weber’s remarks in *The Protestant Ethic and the Spirit of Capitalism* about individuals’ lives continuing to be determined by the requirements of ceaseless machine-like production ‘until the last ton of fossil fuel has burnt to ashes’ (Weber 2009 [1905], p. 157). As Foster and Holleman argue, despite the prominent nature of these remarks, Weber’s status as an early environmental sociologist has tended to be overlooked; but a close attention to his work reveals the linkages in his analysis of modern society between

¹⁶ For a discussion of this point from contrasting perspectives, see Löwith (1949) and Toscano (2010).

the irresistible logic of industrial growth, the ‘iron cage’ of disenchanting rationality in which industrial citizens find themselves dwelling, and the material dependency of this entire socio-economic order on the unsustainable use of non-renewable resources. The implication emerging from this interpretation of Weber is not only that the economic system of capitalism and the ‘thought-world’ of impersonal, rationalistic modernity are inextricably linked, but that this symbiosis is doomed at some point to give out, as capitalism exhausts the material basis for its continued expansion.

The implication of *this* thought for social science is underlined if we consider Weber’s theory of the epistemological foundations of sociology. For Weber, social science was an historically-contingent discipline, symbiotically linked to the development of the rational-inorganic society that was its subject (Bauman 1978, pp. 69–88). That a science of society was even possible was precisely because by the turn of the twentieth century industrial societies had become dominated by a rational, bureaucratic mode of organisation and decision-making; it was this which made society-wide phenomena sufficiently law-like, predictable, and explicable to be successfully subject to scientific analysis. Relating this again to Foster and Holleman’s presentation of Weber, we may appreciate that in theorising that ‘the rational-inorganic process of capitalist modernization was erected on the *temporary* foundations of a specific fossil-fuel regime’ (Foster’s (2012, p. 225) paraphrasing; my emphasis), Weber was implying that the conditions for social science—in the sense of a discipline successfully modelled on the natural sciences—were themselves temporary. The study of the society one lives in, first abstracted into the form of social phenomena, then translated into sets of disembodied data and subjected to methodical analysis in the mode of the disengaged and impersonal scientist—this fits a certain form of social development, one in which the pursuit of worldly self-interest, enabled by technological progress, acts as a wellspring of deducible rationality flowing differentially through the subject categories of states, classes, firms, professions, and individuals. What was crucial both to the fabric of modern life *and* to the enterprise of social science was the general belief that the world itself is predictable and rational (Josephson-Storm 2017, pp. 282–3). But should the pursuit of self-interest appear to be interrupted by the brake placed on technological progress by environmental limits, what becomes of this sense of the rationality of the world—and what becomes then of social science? For eco-Marxists such as Foster, the implication of this line of argument is that mainstream social science is foundationally dependent on an assumption of incessant

technological progress, hence incapable even of recognising the irrationality of the continuing pursuit of a material self-interest which is literally unsustainable. But we could frame this in even more dramatic terms: as the pursuit of material self-interest becomes increasingly irrational in the light of scientific knowledge of its unsustainability, so the capacity of social science to make sense of society itself becomes increasingly challenged. Where its view of human beings apes the approach of the natural sciences it will never be ideally suited for making sense of the irrational arguments broadcast by the environmental sceptics, or the wider irrational inaction in the face of a mortal danger by the political as a whole.

Where would this leave us? What form of social science—or alternative discipline—might we then turn to? The answer suggested in this thesis is an approach which sees social science, practised as a form of philosophical hermeneutics, as a means of generating empirical material for analysis within a theoretical framework of philosophical anthropology: outlining this approach will be the subject of Chapter 2. Before constructing this positive answer, let me first explain why—despite finding much penetrative insight in eco-Marxist critique, as well as in many of the other schools of ‘radical ecology’ (the Anti-Reflexivity Thesis, the Dominant Social Paradigm, green political thought, and so on)—I am not identifying my own work as belonging to their ranks.¹⁷ For a unity which underlies all of *these* approaches is an outlook which seeks a culprit to blame for our ecological crisis, be that a circle of wealthy individuals, a dominant class, a colonial culture, or a group’s ideology.

Within the world of environmental campaigning, such a dualistic approach to the problem of climate change has been described critically as a practice of engaging in ‘enemy narratives’ (Marshall 2014, Evans 2017). While such an approach may seem to make sense (there *is* a well-financed denial counter-movement) and serve to galvanise campaigners, it may introduce a flaw into even the most penetrating analysis. In tracing responsibility to certain groups of agents or systems in this way, one is theoretically containing the problem; ecological crisis then becomes synonymous with those agents. An outlook is easily fostered that holds, however implicitly, that if the power enjoyed by

¹⁷ The approach which examines the psychology of denial stands apart both from the radical ecologies and the other mainstream social science strands discussed here, in that it tends to look for universal human responses to the limits thesis. In other words, it does not conceptualise the causes of ecological crisis to be purely the work of the *other*; but engages with the possibility that we are all involved to some extent. I aim to draw on this discipline in developing my own approach to social science, as discussed in Chapter 2.

those agents could be removed, or the system which supports them replaced, the problem would disappear. For Marshall, the use of enemy narratives is actually counter-productive, first and foremost, because of the scale of the problem is ‘far too large to be overcome without a near total commitment across society’ (Marshall 2015). Second, because the emission of greenhouse gases is so intimately involved in the lifestyles of everyone who lives in industrialised economies, ‘the enemy is really everyone’ (Marshall 2013). Thus, he argues, an outlook of moral purity on the part of environmental campaigners, focusing their energies on censuring big business and right-wing voters, is too partial in both its analysis of the problem and its ability to build political coalitions to effect practical change. Instead, ‘Narratives need to be about co-operation on common ground—and solutions need to be presented that can speak to the common concerns and aspirations of all people’ (Marshall 2013).

While framed for environmental campaigning, Marshall’s analysis appears to have relevance to the ‘radical ecologies’ analysis of the resistance to the limits thesis. The mere act of viewing an agent as pure *other* creates an impediment to understanding, since the act of understanding (as we will explore in Chapter 2) means translating something other into analogous terms which are common with one’s own experience, so that it is other no longer. The suggestion that will be pursued in this thesis is that an approach that seeks to recognise climate change as fundamentally a *human* problem, including posing questions as to how we think of ourselves if we recognise our collective powers are limited, may be able to generate deeper insights into the causes of the blockages to political action than one which begins from a stance of radical opposition to the obvious culprits. In this sense, this thesis aims to complement in analytical terms Marshall’s approach to practical campaigning.

1.5 Conclusion

The strands of research pulled together in this review encompass a range of approaches to the question as to why governments have failed to respond to the limits thesis (or—what I am taking to be its synecdoche—to warnings on climate change). The first group of studies are defined by their focus on the role played by environmental scepticism as a phenomenon, especially in its form as an organised counter-movement. The second literature seeks a sociological explanation for resistance to the limits thesis, looking for

immanent logics in dominant social structures. The third collection focuses on the subjective dimension to the problem, examining the psychological and ideological factors behind the behaviour of individuals in denying the reality of environmental issues. In addition to these three levels of analysis, there is a further diversity on display, between a mainstream approach to social science and the political engagement of radical ecologies scholars.

Underlying such diversity we observed a single unifying theme spanning all the work surveyed in this chapter. It was suggested that the approaches of both mainstream and radical social science scholars display certain disciplinary and ideological constructs which hamper their pursuit of the reasons for the resistance to the limits thesis. What is required, it was mooted, is a form of inquiry that does not set out in effect to analyse the problem of unsustainability as something done by *them*—those fossil fuel elites, or those ‘cool dudes’ among the public—but as something done by *us*, in the sense in which resistance to the limits thesis is a significant part of humanity’s response to an existential threat. We need, in other words, an inquiry which seeks to examine what makes resistance to the limits thesis meaningful to people (even if, regarded objectively, it is irrational), and to seek to do so in the context of human self-understanding.

What this points to is the need for a philosophical inquiry, utilising hermeneutics as a tool to probe what the limits thesis (and its resistance) means to people; organised under the approach of philosophical anthropology, which theorises the human quest to make sense of ourselves. This philosophical background, and the methodology for this thesis it informs, are explored in the next chapter.

2: Methodologies of meaning: philosophical anthropology and existential social science

In the last chapter we considered the intrinsic difficulties faced by social science, in either some of its more mainstream or radical forms (Marxist, green, or otherwise critical of a paradigm of progress), in making sense of society's seemingly irrational failure to act on the limits thesis. The conclusion advanced was that the approach fit for this interpretive challenge was instead a form of philosophical anthropology. In this chapter I discuss what this means, outlining both the philosophical foundations I am relying on and their relationship with the methodological tools I am going to apply in subsequent chapters.

At the outset, some clarification is required: this is *still* a work of social science. It is both, a work of social science *and* a work of philosophical anthropology. One serves and fits within the other. Social science is being employed within this thesis primarily as methodology, a means of conducting original empirical research. Its purpose is to define and retrieve examples of social phenomena for interpretation, and from them to excavate a set of meanings. These meanings are then to be generalised and developed into an original philosophical-anthropological theory. Ultimately, as we will come to in Chapters 7 and 8, this theory will suggest that society resists the limits thesis because it is incompatible with the defining (secular) theodicy of the modern epoch.

In this chapter I aim to both clarify my approach to social science and define what I mean by philosophical anthropology. In form, my model of social science is the emerging field of interpretivist social science, while my heuristical focus is informed by what I am dubbing existential social science. Regarding philosophical anthropology, the philosophical foundations I am drawing on are built on a recognition of the incompleteness of 'the immanent frame' as a description of reality; while its own method is that of philosophical hermeneutics.

This chapter is structured as follows. Especially given the interdisciplinary nature of this methodology, my first task (section 2.1) is to place my orientation within methodological debates among political scientists, and to identify a concrete model of social science that I am seeking to emulate in form; in this way I hope to 'normalise' my

approach by fitting it into an established (if emerging) practice. This institutional form I am identifying myself with is ‘interpretivist social science’, particularly political science, as developed, for instance, by Bevir and Blakely (2018).

My second task (section 2.2) is to further delineate those currents of inquiry which are characterising my own approach to interpretivist social science. Here I will recall the remark made in Chapter 1, that one social science approach to investigating this problem—work on the psychology of denial—offers more potential for generating understanding than others. This suggestion was made on the grounds that the psychology of denial has a tendency towards finding a universal human explanation for the problem (as opposed to seeking an ‘other’ to turn into a culprit to be blamed). In this section I draw the psychology of denial into a wider field which I dub ‘existential social science’. This describes a range of interpretive approaches—in sociology as well as psychology—which start from the belief that our overriding preoccupation as humans is the pursuit of the experience of meaning, especially in the face of our own mortality. In the empirical research I undertake in this thesis, this belief functions not only as an interpretive context to make sense of the results I generate, but as an heuristic to help generate those results in the first place. It is a tool I use to excavate meanings, a guide to the questions I ask of those who apparently deny the validity of the limits thesis.

But, I am saying, this is still not enough; even in this interpretive form, this is not *only* a work of social science. In section 2.3 I set out that this is also a work of philosophical anthropology, and discuss what this means. I define it as being complementary to existential social science in the sense of being based on a similar belief in the centrality of the human search for meaning, but crucially different (and thus capable of obtaining a deeper range of insights) in that its philosophical foundations are anti-naturalist. Most importantly, it defends the ontological reality of a metaphysical dimension to life.

I next (section 2.4) discuss the method of inquiry that falls under this approach, and identify this as philosophical hermeneutics: this sees the key to understanding fellow humans to be the recognition that human life is itself constituted by the activity of interpretation. We are meaning-making beings; and to understand why others do what they do, we need to try to understand what their actions mean to them. Throughout this section the philosopher whose thought I am drawing on most clearly is Charles Taylor.

Beyond this point, there is another layer of methodological explanation still needed. Having discussed the existential framing of my empirical research, and its theoretical foundations in philosophical anthropology, there still remains the question of my research activity itself: what will I be doing to which sources in order to generate my findings for further interpretation? This is discussed in section 2.5. Here I outline that the social science core of this thesis (Chapters 3 to 6) will be taken up with the textual analysis of what I am calling the ‘discourse of growthism’ (mainly comprising environmental scepticism, but also some neighbouring discourses which defend the idea of indefinite growth). This analysis of texts employs a range of related methodological tools from within the field of communications studies¹⁸ to derive a picture of a world-view which stands behind the more explicit forms of intellectual opposition to the limits thesis. This analysis is premised on the belief in the ‘ideational’ (ideas, beliefs, values) as possessing its own objective reality, guiding human behaviour, and thus playing an influential role in politics and social development. Lastly, I discuss how the material generated by this activity will be incorporated into a philosophical-anthropological theory in the concluding two chapters.

2.1 Interpretivist social science

A starting point for this thesis is that *ideas matter to us*, and thus the relationship between people and ideas should be taken seriously by the social scientist as an object of study. In this I am taking my cue from a number of sources, one being Michael Freeden’s analysis of political ideologies (systems of thinking, ‘deliberate or unintended, through which individuals and groups construct an understanding of the political world’ (1996, p. 3)). In contrast to many Marxist approaches to ideology, which set out to ‘transcend its illusory nature’, Freeden is clear that: ‘The thinking encapsulated in ideologies deserves examination in its own right, not merely for what it masks’ (1996, p. 1).

In similar terms I am also citing as a model the approach to ideologies within the ‘pragmatic sociology’ of Luc Boltanski and Eve Chiapello. They criticise the prevailing Marxist or critical social science concept of ideologies as ‘a more or less hypocritical cover

¹⁸ In a more philosophical register these approaches could also be categorised as applied forms of hermeneutics, since all are taken up with parsing texts or text-analogues for their meaning.

for relations of force' (1999, p. x) by which elites achieve hegemony over the masses. Boltanski and Chiapello argue that it is incoherent to maintain that ideology is necessary for society to justify elite rule but to disavow the content of ideologies any power of their own, independent of the power-relations they are said to be merely concealing. Either ideas matter or they do not; and if they do—if normative ideas of the 'natural state of affairs', or 'the common good', or even 'political reality' are essential to maintaining the support of the people for a certain structure of social relations—then it falsifies the materialist argument that politics is a simple reflection of unequal power-relations. As they write (1999, pp. xxiv-xxv): 'the question as to why human beings in society seem to attach so much importance to normativity if, in fact, it plays no role in determining their actions, has remain unresolved, no satisfactory response having been offered.'

If we accept this general premise—that 'the ideational' (ideas, principles, structures of thought, ways of seeing the world) is vital in persuading us to act in certain ways, and explaining to ourselves and others why we do so—then we are soon confronted with a problem. How do we explain the relationships both between intellectual structure (that which shapes how people think and act) and agency (by which individuals are able to originate their own thoughts and actions); as well as, on a more abstract level, between the material and ideational?

Within political science—and, given that the research questions animating this thesis belong to political science, it makes sense to pay particular attention to the critical self-reflection of this discipline—these questions have been a feature of debate over the role played by ideas in shaping politics (the so-called 'ideational turn' in political science) since the 1990s (for discussion, see Finlayson 2004a, Berry 2008, Checkel *et al.* 2016). The backdrop to this turn to the role of ideas was the long post-war dominance, especially in the United States, of positivist approaches to political science, in which the study of political phenomena was modelled on the natural sciences. Against this, a realisation began to grow that such approaches 'are fundamentally compromised by the mere acknowledgement that ideas can exert an independent causal role' (Hay 2004, p. 144). A number of different approaches have been fostered by this awareness, including constructivism, Foucauldian post-structuralism, neo-Gramscianism, and interpretivism (Bevir and R. A. W Rhodes 2003).

A common problem encountered within these approaches has been that, in granting the ideas people hold an independence from their material circumstances, they have ended up enthroning ideas as something of a monolithic force which ‘explains’ (that is to say, determines) everything that individuals do. Berry (2008, p. 14) finds, for example, that post-structuralists place such emphasis on the ideational that individual agency almost disappears from their vision of politics, something reflected in their concept of performativity, ‘referring precisely to the notion that discourse itself acts, or performs’.

Equally, where the ideational is treated as exerting a deterministic influence over behaviour, it will often be reduced in effect to the status of a proxy for materialistic factors—e.g. ‘*x* thinks a certain way because of assumptions and traditions which accompany their position within the class system’. Criticising such versions of the ideational turn, Finlayson writes (2004b, pp. 530–1) that ‘ideas are still examined by political scientists only to be reduced to an effect of something already accounted for [...] The actual ideas in question are left largely ignored; their power simply derivative of the power of institutions.’ A particular difficulty for such approaches lies then in accounting for *changes* in social beliefs: if individual agency is largely determined by pre-existing ideational structures, where does the agency come from to create new ones? In more than one account, some form of dislocation is required—changing structures or crises (Berry 2008, pp. 10–11), giving rise to dilemmas (Bevir and R. A. W Rhodes 2003)—to prompt people (or at least those with political agency) to become intellectual innovators; but the precise mechanism which allows agents to temporarily ‘become more powerful’ than the ideational structures ‘which “normally” govern their behaviour’ (Berry 2008, p. 10) remains mysterious.

Applying their rhetorician’s eye to this mystery, Alan Finlayson and James Martin suggest that the source of such new thinking is politics itself, characterised not so much by ideas as by *arguments*. Politics, being the business of contestation and persuasion, is made up of rhetoric; while

rhetoric can be fully a part of the process of coming to believe something in the first place. To believe something is to accept the (many kinds of) reasons that can be presented for so believing it; to present and explain a belief to others is to present the arguments that are part and parcel of the belief. (Finlayson 2007, p. 551.)

Here, too, we might observe, the mystery continues, being merely relocated. Crucially, this emphasis on rhetoric struggles to account for why some arguments are more successful than others, and with some audiences rather than others. Martin draws attention (2014, pp. 113-125) to the neuroscience of emotional engagement with an argument, and talks about the importance of enthusiasm in response to political rhetoric: but an argument in itself cannot give rise to the experience of enthusiasm, it has to, in more poetic language, *strike a chord* with (something already inside) us. The description of a belief as acceptance of the ‘reasons that can be presented for so believing it’ seems just to dissolve the ascent to a position into the arguments which have invited such ascent, leaving the actual phenomenon of belief unexplained. To say that someone believes something because one accepts the reasons given for it begs the question as to why and how they would accept any of those reasons in the first place. If the answer to that is that they must have already accepted the reasons given for accepting those reasons, then we are in for an endless regression. In short, this approach to rhetoric appears to show that we have the agency always to invent an argument, but it may not in itself show how this translates into shaping the beliefs of others.

How then might we hope to approach these mysteries? My suggestion is that we can find a rich access to insights within the concept of interpretive social science, as championed notably by Bevir and Blakely (2018). What this approach suggests is that human life is inherently interpretive: that humans have a need for meaning, that we need to render the world and our role within it intelligible to ourselves, and that we will readily believe ideas which reinforce such understanding. We engage with the world as though it were a text, parsing it for meaning—ultimately about our place within it. Changes and crisis situations which undermine our faith in the meaningfulness of our understanding may equally prompt us to seek or become receptive to new explanations for our role within reality, or to become more defensive of our existing beliefs—dogmatically rejecting any arguments which threaten to undermine them, flocking to those arguments which promote such dogmatic rejection. Here, I would like to argue, we may hope to have found a guide to interrogate the success or failure of the social adoption of new beliefs—especially where society appears to be acting irrationally by denying the implications of what appears to be objectively valid evidence for change. The focus of our investigations should be this: what meanings do socially-influential ideas provide to those who subscribe to them?

More specifically, I would like to take up Blakely's (2016) invitation to construct an interpretive research programme informed by philosophical anthropology and hermeneutics, not least as developed by Charles Taylor (as will be discussed in further depth in sections 2.3 and 2.4 of this chapter). Blakely suggests four principles which might guide such work: first, that the causality of human action is not deterministic (i.e. it cannot be reduced just to the result of impersonal socio-economic conditions) but is rather the 'result of creative, contingent reasoning processes'; second, 'because causality with respect to human agency is contingent, the explanatory form appropriate to the social sciences is storytelling or narrative and not general causal laws'—and thus, since they 'are dealing with the same explanatory form as history and even literature [...] the social sciences are one of the humanities'; third, the fact that interpretive social science is narrative does not mean it belongs to 'a radically skeptical postmodernism', but rather that its measure of the objective truth of its findings is the practical consideration of the explanatory power of an outlined theory, and of its coherence within the widest web of mutually-supporting theories; fourth, that interpretive research understands itself to be normatively-engaged rather than aspiring to be value-free, and that this must necessarily be the case since any attempt to make sense of human behaviour 'always implies some evaluative norm of rational versus irrational or illegitimate action' (Blakely 2016, pp. 95–97).

The approach to research carried out in this thesis embraces all four of these principles, aiming for the synthesis sketched out by Blakely (2016, p. 112): interpretive social science should fuse 'both a grand historical, sociological perspective' and 'fine-grained analysis', meaning that 'the big division of labor between our present-day professional social scientists and political theorists breaks down'. Such is the design which this present study is aiming for.

2.2 Existential social science, its strengths and limitations

In overall methodological orientation, then, this thesis belongs to interpretivist political science. But this does not in itself tell us about the theory of human behaviour it is using as a heuristic, to inform the kinds of questions and methods of analysis it is bringing to bear on its subject. This theoretical body of work I am naming as 'existential social science'. By this term I am referring to a range of approaches that seek to interpret

human behaviour, social phenomena, and cultural works, with reference to an overarching theory: that we humans are fundamentally preoccupied with a need to find meaning in our lives, especially in the face of death.

Two main groups of theorists and disciplines are discussed here. Discussed first are the psychological theories of Ernest Becker and Victor Frankl, and the burgeoning field of psychology-of-meaning studies which has in part formed in their wake.¹⁹ Second, we come to the sociologists Peter Berger, Tim Jackson, Zygmunt Bauman, and John Carroll: my interest here is on the elements of their work which focus on the existential struggle—especially in a secular age—to escape a feeling of meaninglessness when conscious of one’s mortality. I argue that in their focus on the existential experience of human consciousness the psychologists are capable of attaining penetrating insights, but that their work is circumscribed by their inability, in the end, to transcend the naturalist limitations of conventional social science. The sociologists discussed here are then presented as going further towards breaking free of these limitations, and thus trenching on the philosophical anthropology discussed in the next section.

Beginning with Becker, he is best remembered for *The Denial of Death* (1973), an analysis of the human condition which places (1973, p. ix) ‘the idea of death, the fear of it’ at the centre of culture—the latter to be understood as ‘activity designed largely to avoid the fatality of death, to overcome it by denying in some way that it is the final destiny for man.’ For Becker, all cultural activity is at heart driven by the desire to attain a symbolic immortality through contribution to a social collective which endures through time: ‘History, then, can be understood as the succession of ideologies that console for death’ (Becker 1975, p. 64). Becker’s theory has subsequently been developed into a prominent subfield of psychological research, Terror Management Theory (TMT) (Solomon *et al.* 2015, Darrell and Pyszczynski 2016, Harvell and Nisbett 2016). TMT posits a reciprocal relationship between awareness of mortality and cultural identification. Reminders of one’s mortality trigger a defensive attitude towards the culture to which one feels connected, while criticisms of and threats to one’s cultural identity increase anxiety about mortality. As briefly featured in Chapter 1’s discussion of the psychology of denial, TMT has begun to be applied to interpretations of climate change denial (Crompton and

¹⁹ While formally a cultural anthropologist, Becker was a strict interdisciplinarian, and his work on ‘mortality aversion’ drew heavily on the work of psychologists, notably Otto Rank.

Kasser 2009, Dickinson 2009, Hamilton and Kasser 2009, Douglas 2019).

The psychologist Victor Frankl provides a complementary analysis. In *Man's Search for Meaning* (2004 [1946]) and other works, Frankl argued that Freud was wrong in emphasising a human 'will for pleasure'; rather we have an innate will for *meaning*, and this quest for one's life to feel purposive and significant is the fundamental driver of human behaviour (de St. Aubin 2013, p. 248). Frankl's theoretical work, while begun before his incarceration in Nazi concentration camps, gained added force from the observations he made of them, notably his emphasis on the importance of holding onto a life-purpose: 'The prisoner who had lost faith in the future—his future—was doomed' (Frankl 2004 [1946], p. 82). Frankl founded a school of psychotherapy (logotherapy) devoted to improving patients' mental health by helping them find a sense of meaningfulness in life; this has influenced the related field of existential psychology (Yalom 1980).

Both TMT and Frankl's theories feature within a broad field of 'meaning-of-life' psychologies, ably represented by a recent state-of-the-art collection of papers (Hicks and Routledge 2013). Surveying this field a handful of common themes emerge. The first is that humans have a fundamental need for meaning (Cozzolino and Blackie 2013), both for things to make sense ('small-m meaning') and for our lives to feel significant ('capital-M meaning') (Chao and Kesebir 2013).²⁰ This becomes an especially keen need when confronted by things which do not make sense (Heintzelman and King 2013): in such circumstances we may unconsciously impose meaning on a situation, even if this means falsifying the evidence of our senses (Heine *et al.* 2006); or we may begin an active quest for meaning, especially when events contradict our deeply-held beliefs, leaving us with 'shattered assumptions' (Janoff-Bulman 1992). A second common theme is that this need for meaning implies a universal need for hope, translating itself into the pursuit of life-goals by which we provide a meaningful structure to our lives (Feldman 2013, Michaels *et al.* 2013). A third theme, at the heart of both 'small-m' and 'capital-M' meaning, is the principle of connectedness: it is in perceiving connections between one thing and a web of other meanings that we make sense of things, assimilating them within a coherent picture; and it is in feeling connected to other people that we gain a sense of

²⁰ For a popular account that ties this analysis specifically to social resistance to the limits thesis, see Lent (2017).

matter as a person (McLean and Morrison-Cohen 2013). In this latter sense, connectedness extends to an imagined link with future generations (de St. Aubin 2013), and to a suprapersonal idea of community embodied within one's culture (Kesebir 2011). A final theme is the importance of narrative: stories allow us to assemble discrete events into a coherent whole, and they are framed to be shared with others (even if we are only telling them to ourselves). Narrative can thus be seen as a meta-theme, keying into the themes of meaning (telling a story is the unfolding of its meaning), hope (the pursuit of goals structuring the narrative arc of one's life-story) (McAdams 1993, Baumeister and Newman 1994), and connectedness (both bringing disparate perceptions into a coherent whole, and connecting with others in sharing our story) (McLean and Morrison-Cohen 2013).

Taken altogether this is a rich stock of insights with which to analyse 'what is going on' beneath the surface of human life in general. Furthermore, this field's emphasis on existential situations, in which people question the meaning of their lives when faced with the realisation of mortality, seems especially apt for investigation into the limits thesis, given its often apocalyptic framing (e.g., 'Twelve years to save the planet') (Hulme 2008, Asayama *et al.* 2019). Writing around the time of the original *Limits to Growth* report, Becker was already observing 'the plight of today's humanists when faced with the probability of the death of their planet', and diagnosing that this could lead to 'a crisis of faith and hope of major proportions' (1972, p. 191). He notes that, 'In any historical period the task of the social sciences is to see broader and better than the members of a given society what is killing that society from within its own institutions' (1972, p. 160) remarks which could stand as the research brief for the entire social science component of this thesis.

At the same time, the insights generated by this field are limited by its ultimate adherence to a naturalist conception of social science, and beyond that a materialistic conception of the world. The strengths of this field are founded on the attention it pays to what William James (1890) described as 'the subjective rationality' of experience—that 'feeling of rightness' (Heintzelman and King 2013, p. 93) which is the very subjective *experience* of meaning. But this experience is ultimately denied by the repeated attempt within this discipline to reduce subjective phenomena to a deeper and more objective level of reality, in order to explain them (away). Michaels *et al.* (2013) present this reductive approach as itself a form of hermeneutics (quite antithetical to the concept of

philosophical hermeneutics discussed later in this chapter), a way of tracing the true meaning of human behaviour to a level beyond any felt experience. Thus for evolutionary psychologists, a 'hermeneutical' reading of love is that: 'People ascribe personal meanings to romantic attachment, for example, although the ultimate meaning of this realm of experience is the potential for gene propagation' (Michaels *et al.* 2013, p. 105). Here the pursuit of understanding 'what is going on' becomes so reductive as to interpret the subjective experience of meaning as being *purely* subjective, entirely free of causal power, not really real at all.

More widely, this same reductive falsification of our most passionate beliefs results in Becker's view that all of our attempts to find a sense of meaning in our own deaths are nothing but a lie—since the brute physical reality is we are mortal individuals, and do not live on beyond the point of death. Becker's view of the tragic condition of man is that we cannot face up to this truth, and thus have to 'live in a lie in order to live at all' (Becker 1975). The limitations of this world-view are brought out in the criticism made by Glenn Hughes (2003), writing from the perspective of a philosophical anthropology influenced by that of Eric Voegelin. For Hughes (2003, p. 212), 'Becker's dilemma is that of a scientist who knows that the data he has isolated are of profound importance, but who can only interpret them in terms of a familiar but faulty theoretical paradigm.' These data, Hughes suggests, tell us that humans have an innate longing for participation in a metaphysical dimension of existence, and that this is embodied in the history of human culture—something lost on Becker due to his endorsement of the modernist view that we are 'purely immanentist animals' (Hughes 2003, p. 209).

Metaphysical sociology

We come now to the second group of 'existential social scientists' who are informing the approach taken to social science in this thesis. John Carroll provides a conceptual label by which to identify them all, in describing his own work as 'metaphysical sociology' (James 2018). Carroll describes this approach as focusing 'on the meaning questions that confront all humans, questions about origins, about what to do with one's life, and about death' (2014, p. 562). These are the questions which ought to be the underlying guides to all social science inquiry, Carroll suggests, since the essence of being human is that we

‘live metaphysically’, in worlds of ideas; and since the knowledge of death puts our experience of communing in such a ‘metaphysical order’ into question (2018, p. 14). This is the complicating factor in human experience which it is the job of the analyst to grapple with, to help us make better sense of our existence. Carroll is especially interested in the challenge of making sense of our human predicament ‘in the modern secular West, where traditional religious answers have waned’ (2014, p. 562). His method proceeds in large part through cultural criticism, reading cultural products for what they say about the mentality of their age. Writing on Carroll’s contribution to sociology, Tester (2018) draws attention to its potential to make sense of society’s response to warnings of environmental apocalypse.

Zygmunt Bauman—explicitly identified by Carroll (2018, p. 17) as a fellow metaphysical sociologist—is another who provides a model to be drawn on here. Focusing purely on Bauman’s work on the importance of socially-upheld immortality ideologies, in his theory culture is primarily a response to the consciousness of mortality. This is to understand culture as the pouring of oneself into objectified forms and collective causes, which can merge with the experience of, or be remembered by, others. We seek participation, Bauman says, in an ongoing conversation, through media which bridge the spans both between individual lives and between generations (Bauman 2001, pp. 238–9): it is through our connections with others that people maintain ‘the meaningfulness of their being’ (1992, p. 40), despite consciousness of their own finitude. Bauman writes on the particular forms in which such a drive for a sense of living on beyond one’s own death has been shaped in secular modernity: masses of people have identified themselves with collectives such as the nation, their class, or the progressive future of mankind as a whole (2001, pp. 242–4). The imagined contribution to such collectives has formed an important sense of solace for many people’s own personal consciousness of mortality. Viewed in these terms, where the prospect of climate change undermines people’s confidence in the longevity of the human collectives they identify with, it is likely to trigger an extremely unsettling existential anxiety: might the cultural bridges we are continually building, to vicariously join our existence to the lives of our successors, turn out in fact to be roads to nowhere?

For a consideration of the sociological impacts of entertaining such doubts about the future endurance of our human collectives we may turn to the theories of another who could be identified as practising metaphysical sociology. For Peter Berger, the ‘social

order' has the essential psychological function of establishing a nomic structure: a set of rules and roles, providing a meaningful context for our lives and a sense of the fundamental rationality of existence. Where this structure fails, we may be plunged into the condition of anomie, the despairing sense that life is chaotic and meaningless. In order for society ultimately to play this nomic role, Berger understands, it must be secured within a belief system which provides us with a sense of a *cosmic* order: this is Berger's sociological depiction of religion as a 'sacred canopy' which society erects over itself to provide its members with a collective sense of meaning. Like Bauman, in a secular age Berger sees identification with enduring collectives as playing a vital role in grounding the social order in an intertemporal order: one's death can be rationalised when seen as an episode 'in the continuing history of the collectivity with which the individual is identified' (1990 [1967], p. 60). Again, we may say, this theory has great relevance for analysis of the social impacts of warnings of existential apocalypse: to put into question the permanence of society is to disrupt the 'taken-for-granted quality' with which the social order should ideally be regarded, if it is to fulfil its nomic function.

A final model to be highlighted here is Tim Jackson's work on the theodicy of consumerism. Drawing on Berger, Jackson develops a sociological theory of theodicy—originally a theological enterprise, concerning the need to reconcile the presence of an omnipotent Creator with the existence of death and suffering in the world—as concerning the need to find meaning in the face of the terrors of anomie (Jackson 2006, 2013, Jackson and Pepper 2011). Looking at Western culture in the late twentieth and early twenty-first centuries, Jackson's view is that 'consumer society is itself operating as a kind of secular theodicy' (Jackson and Pepper 2011, p. 20). It is 'the seemingly endless availability' of things to purchase which is crucial: it 'consoles us for the temporary nature of our lives, for our disappointments and failures. It assures us that society holds out the promise of better lives (for us and for our descendants) in the future' (Jackson 2013). Meanwhile, our need for a sense of connection with others is satisfied by the mediating role which the goods we value play in providing a sense of figuring within the world around us.²¹ From this theoretical standpoint, the idea of environmental limits poses more than just economic or political questions, as great as these are. If environmental

²¹ See also Poole (2018): 'We buy stuff to shore up our material reality in order to make that reality feel more substantial. Buying the right stuff also wins us approval from our peer group, which makes us feel alive. Further, the activity of shopping itself momentarily distracts us from contemplating the terror of our own inevitable death.'

scarcity meant the endless stream of goods began to run dry, this theory suggests, it would—absent an alternative faith, secular or otherwise—result in a crisis of theodicy.

2.3 Philosophical anthropology

Existential social science, then, most deeply in its form as metaphysical sociology, provides a rich theoretical framework and set of conceptual tools for making sense of human life, especially—as with environmental limits—when questions of finitude are involved. Nevertheless, this isn't enough on its own, I am suggesting; for a fuller understanding we need to reach for philosophy—for philosophical anthropology, to be more exact.

What is philosophical anthropology?⁹ One perspective is to view it as a response to a crisis in human self-understanding, as a result of 'the growth of the natural sciences that has occurred since the sixteenth and seventeenth centuries, and, along with it, the demise of the ancient and medieval worldview that gave the human, or more specifically, *man*, a special position in the cosmos' (Benjamin and Malpas 2017, p. 318). Jerome Carroll (2013, p. 859) has described its eighteenth century 'prehistory'—exemplified by Herder (Taylor 2017)—as a kind of 'hybrid discourse' on the nature of man: it aimed to 'fill the gap' left by the failure of Enlightenment attempts to develop impersonal, a priori systems of thought that could indisputably arrive at the truth about reality and the right forms of human conduct. In its more definitive form—as a branch of twentieth-century philosophy developed, notably by Max Scheler, in Germany in the aftermath of the First World War (Fischer 2009, Carroll 2013)—it emerged, similarly, out of a sense of profound disorientation. Writing in 1924 Scheler declared there was a need for a new philosophical investigation into mankind because: 'We are the first generation in which man has become fully and thoroughly "problematic" to himself; in which he no longer knows what he essentially is, but at the same time also *knows* that he does not know' (Scheler 1924, in Buber 1945, p. 307). This disorientation was the result both of the advance in scientific knowledge and of a simultaneous disillusionment, not only in traditional religious belief-systems but in a faith in the potential for a social order founded on reason. In works such as *Man's Place in Nature* (1961 [1928]) Scheler sought to rebuild a new self-understanding of human life from scratch, integrating a scientific understanding of mankind (drawing on biology, psychology, and sociology) with a

metaphysical vision of humanity as being essentially defined by our consciousness of a spiritual dimension of existence.

Not everything done under the banner of philosophical anthropology necessarily has to have such an explicit or esoteric metaphysical focus; at its most basic it stands simply for ‘the philosophical examination of human nature’ (Schacht 1990, p. 159), however this may be understood. All the same, given its association with Scheler (and some others who followed in his wake, such as Voegelin (Levy 1993, Stradaoli 2005)) it has unsurprisingly invited suspicion from the world of analytic philosophy (Benjamin and Malpas 2017, p. 317): in filing his critique of social science under the heading of philosophical anthropology, Charles Taylor acknowledges that (1985a, p. 1) ‘this term seems to make English-speaking philosophers uneasy’. More generally, for a long time philosophical anthropology has been ‘unhappily neglected’ (Pihlström 2016, p. 43). In some quarters, however, it has recently begun to enjoy something of a revival (Borsari 2009, Honenberger 2015, Pihlström 2016). In part this has been prompted by a rise in anxieties about mankind’s relationship with nature, as symbolised in the concept of the Anthropocene (Benjamin and Malpas 2017, p. 318).

Those currents of philosophical anthropology I am drawing on—exemplified variously by Max Scheler, Eric Voegelin, Hans Jonas, Charles Taylor, and David Levy—are united by their defence, in one form or another, of the reality of a metaphysical dimension of existence, and of the primacy of our involvement with it as defining ourselves as human beings. In Voegelin’s articulation, for example, human life is the lived occupation of an ‘in-between’ (the Platonic *metaxy*), spanning our worldly environment and a sensed existence of a transcendental ‘beyond’ or inner structuring of reality. This conception would more conventionally—within naturalist philosophy and social science—be represented as arguing that it is self-consciousness, language, and the abstract quality of intellectual concepts which uniquely characterise humans among other species. The crucial distinction is that the versions of philosophical anthropology on which I am leaning would not see this human essence as being confined to a subjectivised or psychologised picture of the workings of minds. Rather, the idea of the human would be defined by a relationship with an idea of a reality that lies external to the mind.

This may be difficult territory to stake out in a thesis which begins with a research question framed as a problem of political science. From the direction of social science

and naturalist philosophy there are a number of obvious criticisms which could be made here. First among these might be the rejection of all talk of metaphysics as being unsupportable, since incapable of being empirically observed. More widely the objection might be made that any theory of human nature which places our relationship with a metaphysical dimension of existence at its heart can only falsify itself, since it surely cannot be applied to the multitudes of people who do not recognise any such dimension. Lastly, but perhaps most problematically, the risk must be not just of objection but of *rejection*—on the grounds that this collaring together of social science and metaphysics does not belong within any academically respectable genre: of its smacking of the dilettante.

In response to such objections, I might begin by drawing attention to a vision of political science framed in explicitly philosophical-anthropological terms—Eric Voegelin’s *New Science of Politics* (1987 [1952]). Voegelin took aim against the prevailing positivism of mid-twentieth century political science, based as it was on a ‘well-known series of assertions’:

that a study of reality could qualify as scientific only if it used the methods of the natural sciences, that problems couched in other terms were illusionary problems, that in particular metaphysical questions which do not admit of answers by the methods of the sciences of phenomena should not be asked, that realms of being which are not accessible to exploration by the model methods were irrelevant, and, in the extreme, that such realms of being did not exist. (Voegelin 1987 [1952], p. 4.)

As this passage hints, Voegelin’s critique was not confined to the methodological conventions of an academic discipline but extended to the prevailing understanding of reality in society at large: the disorder he diagnosed in contemporary thought was precisely this marginalisation of the metaphysical. The immanentism which resulted, he believed, would lead to politics becoming emptied of ethics, descending at its worst into totalitarianism. Voegelin’s call for the ‘restoration of political science’ via a ‘return to the consciousness of principles’ (p. 2) was thus made out of a sense of practical urgency: the role of the political scientist was not merely to analyse politics but to act on it, by restoring to it a sense of the metaphysical dimension to human existence.

It is a contention of this thesis that the nature of its topic—understanding the limits thesis as implying a potentially existential threat to humanity—calls for the adoption of

such a philosophical-anthropological approach to the study of contemporary politics.²² For it is in contemplation of the existential threat of climate change that I find myself *engaged* in a sense which appears incompatible with the ideals and ordinary boundaries of social science research. Paradoxically, this sense of engagement with my topic also creates a sense of *disengagement* from the conventions of its academic study. To put the human world into question is to be dislocated from the practices and institutions by which reality is socially constructed (e.g. Berger and Luckman 1967), elements which normally take on the qualities of unquestionable facticity. Among these institutions is academic research itself: to dwell on this is to undermine the naturalist ideal of the scientist's patient contributions to a collective and open-ended process of inquiry—for the reason, we may perceive, that this process may not be so open-ended after all, but have an untimely end thrust upon it.

In this case the openness to a philosophical approach which incorporates metaphysical speculation might be viewed as in fact the *responsible* path to take, even with its risk of earning the rebuke of dilettantism. This, we might reflect, is already implied in the arguments of Jonas as to the 'imperative of responsibility' we have to aid the survival of humanity in the face of the threats which technology poses to us (Jonas 1984). More particularly, the resort to philosophical anthropology to address an urgent political question conforms to Levy's call for the development of a 'practical philosophy': a practice in which a philosophical understanding of humanity's place in the world informs political arguments aimed at preserving society from existential danger (1993, pp. 128-151).²³ What Levy's concept of practical philosophy identifies as necessary—the blurring of boundaries between the professional and the personal, observation and engagement, the academy and society, the theoretical world of inquiry and the political world of action—is precisely what is often seen as the essence of dilettantism. From Levy's perspective, meanwhile, it would be precisely the professional adherence to the naturalist-based conventions of social science—an 'impractical' philosophy, given its ideal of

²² In part I am reading the following comments in the afterword to the original *Limits to Growth* report as an invitation to address its conclusions through philosophical anthropology: 'The last thought we wish to offer is that man must explore himself—his goals and values—as much as the world he seeks to change. The dedication to both tasks must be unending. The crux of the matter is not only whether the human species will survive, but even more whether it can survive without falling into a state of worthless existence' (King *et al.* 1972, p. 197).

²³ Levy's 'practical philosophy' is echoed by Taylor's emphasis on Aristotelian practical reason: 'fundamentally a matter of being sensitive or responsive to the ethical demands of a particular situation' (Smith 2004, p. 45).

scientific detachment—which had the air of dilettantism.

Beyond any such concerns relating to the form of an inquiry made under the banner of philosophical anthropology, there remains the potential objection to its content—centring on its treatment of the metaphysical. How can such theories have validity when so many people would deny any belief in a metaphysical dimension of existence? This is a forceful objection. In response we could cite Sami Pihlström's (2016, p. 18) observation that the practice of philosophical anthropology has often begun in response to a feeling that something has gone wrong in the collective self-understanding of humanity. For those philosophers I am citing, what has gone wrong is precisely the alienation of mankind from its metaphysical consciousness; what Voegelin refers to as the 'refusal to apperceive' reality (Voegelin 1999 [1987], p. 61). The corollary of this argument (made explicitly in works such as Voegelin's *The Political Religions* (2000 [1938])) is that, if our engagement with metaphysics is innate, then it will continue, albeit in occluded form, even among those who profess to be actively hostile to metaphysics as a concept. Naturalism itself would thus be understood as being based on a metaphysics, although one which functions as a kind of anti-metaphysics: an immanentist ontology which treats the physical, material, and social as being subject to empirical knowledge, hence real; but which brackets out everything else as being impossible to observe objectively, and thus not really real at all. In this sense we could see it as shielding its own philosophical foundations from critique. But this is precisely what a philosophical-anthropological critique of social science seeks to open up.

Here we may see exactly why metaphysical sociology is not enough on its own. Carroll, Bauman, Berger, and Jackson: all pay attention to the centrality of our experience of the metaphysical, in the sense of an imagined relationship to an existence which lies beyond our mortal, individual selves—thus the emphasis on 'metaphysical order', 'immortality', 'cosmic order', 'theodicy'. But their practice belongs firmly to social science, and thus its focus is not on any sense of the metaphysical itself but on the subjective and social *experience* of it. Within its disciplinary boundaries it brackets out metaphysics as such; one could *conceivably* practise metaphysical sociology and yet remain in practice a thoroughgoing naturalist, rejecting the very idea of metaphysics as being unsupportable. But in bracketing out metaphysics from its own work, it is unable to critique the metaphysical foundations of the main forms in which the human relationship with the metaphysical currently takes. The advantage of philosophical anthropology is

that it enables us to take this extra step. Only this way, we might say, can the promise of Carroll's metaphysical sociology—to understand our relationship to a metaphysical order, and give this preoccupation due prominence—be truly fulfilled.

2.4 Philosophical hermeneutics

We have so far discussed philosophical anthropology as an overall practice, and one with a particular orientation: it links together metaphysics and the empirical practices of the natural and human sciences in pursuit of an inquiry into what it is to be human. Something remains to be discussed, however, in terms of *how* this inquiry is pursued: what is its method, what are people *doing* when they do philosophical anthropology? In this thesis I am following Charles Taylor in identifying this as hermeneutics.

What is hermeneutics? The word derives from the Greek '*hermeneuein*', to interpret, and relates to the name of the god Hermes, the playful 'trickster' who brings messages from the gods, whose meanings require interpretation (Moules 2002, Smith 2004). At its most essential, hermeneutics is a creative practice which seeks to interpret communications whose deeper, more significant meanings may be shrouded in ambiguity. It is a practice with a long history: while most closely identified with the exegesis of Biblical texts (Palmer 1969, Bauman 1978, Mantzavinos 2016), its roots have been traced to the interpretation of Homeric epics (Mantzavinos 2016). As a method it began to be applied beyond the exegesis of canonical texts, when adopted by historians such as Dilthey, who sought to interpret historical records in order to understand life as it was truly experienced in past ages (Gadamer 1989 [1960]). Dilthey's emphasis on the embeddedness of thought within the cultural totality of its time was later developed by Heidegger, who saw the task of hermeneutics as being the 'self-elucidation' of this historicised understanding of life (Scharff 2013, pp. 141-2): it thus becomes a way of understanding how we are the products of, and produce, the world of meanings in which we live. This gives us the 'ontological turn' in hermeneutics: in the post-Heideggerian tradition of philosophical hermeneutics, we live in a world of meanings; and in the act of interpreting something (of understanding another person's meaning) one's own understanding of the world (and hence one's own self) is changed. In this way hermeneutics itself becomes a philosophical anthropology of its own, a theoretical understanding of what it is to be human.

It is within this tradition that Charles Taylor places himself (Taylor 1985a, p. 15, Smith 2004, McKenzie-Gonzales 2015, p. 14). His overarching critique of social science is that it is anti-hermeneutical: in its ‘ambition to model the study of man on the natural sciences’ (1985a, p. 1), it adopts an ideal of ‘disengagement’ by which the interpretive personality of the researcher is removed, so far as possible, from their own investigation. By blunting the innate hermeneutical faculties by which we ordinarily gain insights from our experience, social science methods modelled on naturalism may actually form a barrier to understanding (Taylor 2007, pp. 285–6). Representing mental experience mechanistically, as the interactions of sense-data, rather than the thoughts and feelings experienced by a person (Taylor 1985a, pp. 51–2) is a nonsense, since meaning is always produced and experienced by a subject—meaning is always meaning *for* someone (Taylor 1985a, p. 23). Trying to understand human activity while bracketing out subjectivity is an absurdity, since without individuals’ desires and purposes there wouldn’t be any actions to understand in the first place (Smith 2004, p. 35). Such foundational critique of the mainstream practices of social science may seem an impossible task; but, quite simply: ‘The argument has to be made again and again, that “experience-far” methods based on the natural sciences risk distorting and missing the point when applied to the phenomena of psychology, politics, language, historical interpretation, and so on’ (Taylor 2007, p. 285).

Taylor’s critique of social science is not only a critique of its methodology; the risk he highlights is not just that its results will be flawed or uninteresting (‘wordy elaborations of the obvious’ (Taylor 1985a, p. 1)). More problematically, social scientists may try to make reality conform to what their methods can show, condemning ‘what doesn’t shape up [...] to a shadow-zone of the unreal’ (Taylor 2007, p. 285). At its heart, Taylor’s critique is of a modern philosophical anthropology which naturalism implies; or rather an anti-philosophical anthropology which, by not investigating human life as it is actually experienced (but rather seeking to reduce it to more essential levels of reality) both reflects and perpetuates a faulty view of human life itself. The effect of a professional perspective, ratified by the prestige of academic science, which does not recognise the mental-intellectual dimension—the inner world of thought, which, through language, we share with others—as being really real: the risk is that this distorts a wider social understanding of reality, and of how humans figure within it.

If that is the negative case for philosophical hermeneutics (or against naturalist

social science), there is also a positive case to be made: what can it do for us? There are two elements of philosophical hermeneutics which it might be useful to highlight. The first is how it helps to answer the fundamental question of social science research: how can we ever really understand other people? The more distant they are, the more we feel the need to subject them to scientific study, precisely in order to understand what is strange to us; but the more our resulting need to understand, the more problematic such understanding becomes, because of their very difference. Taylor suggests a way forward: in analysing someone from a seemingly alien culture one should strive to find a common language. As McKenzie-Gonzales (2015, p. 23) glosses it, we need a way to ‘express our life and that of the society/culture studied in relation to a number of human constants at work in both [...] What is pursued here is to strive for a “third language” in which both the “home” and “alien” languages could be put in contrast to each other in regard to specific constants.’²⁴ This thinking is at the heart of Gadamer’s concept of the ‘fusion of horizons’ (a merging of the critic’s perspective with that of the subject/s under analysis), of which Taylor makes much (Taylor 1985b, pp. 252–53). As this concept suggests, in finding or creating a common frame of reference within which to understand someone else, we may learn something more about ourselves as well (Taylor 1981, p. 205).²⁵

This brings us to the second feature of hermeneutics to highlight here: not only can it help us to understand other people better (and ourselves in the process), it can help us to improve the quality of our thinking—and even act as a positive influence on the intellectual life of a cultural collective. Here philosophical hermeneutics unfolds its potential, moving beyond epistemology into the spheres of normative moral and political

²⁴ Taylor’s approach here is echoed by Zygmunt Bauman. While approaching the practice of hermeneutics from sociology—from ‘the other side’, as it were to Taylor’s philosophical perspective—Bauman arrives at a similar articulation of theory regarding the possibility of understanding other (sub)cultures, and the gains in self-understanding this may result in. Understanding, Bauman writes, is ‘about sharing in a form of life. Or, in the case of an encounter between hitherto alien forms—about constructing a form of life of a “higher order”, which will incorporate the previous two as its sub-forms.’ One comes to understand another person, group, or culture by ‘spotting the general in the particular, by enlarging both the alien and one’s own experience so as to construct a larger system in which each “makes sense” to the other’ (Bauman 1978, pp. 217–18).

²⁵ This hermeneutical approach to the problem of other minds is given some of its strongest support by Max Scheler. The approach of naturalist social science has it the wrong way round, he argues. Meyerhoff (1961, pp. xviii–xix) summarises his argument: it is not ‘that we first know only our own selves and must grope our way to the knowledge of others with the help of some artificial theory. Instead, the knowledge of other minds is given prior to the knowledge of our own. We have direct access to other minds because, to begin with—say, as children—they form as integral a part of our immediate experience as anything else in the world. It would be more correct to say that we discover our own selves by “inference,” in other words, by detaching and differentiating them from the community of other minds in which we are originally immersed.’

philosophy.

To understand what this means we need to start with a distinction Taylor makes as to the hermeneutical premise that humans are 'self-interpreting animals'. Taylor recognises that such self-interpretation is not largely a conscious process. Rather our experience is to a large extent formed by a 'pre-interpreted, reflexive' (Smith 2004, p. 32) form of 'proto-interpretation', shaped by the meanings already present in the language in which we think, and 'embedded in a stream of action' (Taylor 1985a, pp. 26-27). It is this understanding which opens up the space for hermeneutics, making it both possible and a potentially valuable practice. For to say that we are in large part not consciously directing our interpretations of the world means that to an extent our thoughts are not entirely our own, that we are taking them on from culturally-prevalent beliefs, and are influenced by our unconsidered emotions. As Taylor (1985a, p. 92) says, 'our common-sense descriptions of what is happening [may be] inadequate, or sometimes even illusory. They fail to give us an explanatory grip on our situation, or to help us to act effectively.' While the social scientist should always begin by trying to understand people's own interpretations of their thoughts and actions, they should not stop there; instead they should hold them up to certain criteria for judgement (Abbey 2000, pp. 151-194). The critic 'takes the spontaneously generated self-interpretations of a culture as the point of departure, and advances new, more perspicuous and more explanatory interpretations in their place' (Smith 2004, pp. 35, 128). In analysing the meanings given by a subject for their own behaviour, Taylor suggests, the critic might see if it were possible to present a theoretical explanation that were more complete, profound, or consistent, or which brought otherwise hidden aspects of the meanings behind this behaviour to light. One might then ask whether one's theoretical account was persuasive to the subjects themselves, and in such a way as to lead to a fuller or more authentic realisation of their own virtues (Taylor 1985a, pp. 91-115).

Here we may see philosophical hermeneutics in its most ambitious form. In focusing on the practical embeddedness of our selves within our cultural contexts, hermeneutics presents itself as a form of practical criticism concerned not just with individuals but with the cultures in which they are embedded. In the extent to which individuals' self-interpretations are shaped by and reflective of cultural attitudes and responses, the criticism applied to such beliefs may be extended to wider currents of thought. In making people conscious of the understandings they had previously taken for

granted, and thereby liberating them to an extent from received opinions, hermeneutical critique has the potential, as a social force, to contribute to the intellectual liberation of a whole culture, so that its prevailing beliefs may be more in line with its consciously held ideals.

Taylor's concept of hermeneutics naturally supports the use of Levy's practical philosophy discussed here. To apply Taylolean principles in analysing the ideas of environmental sceptics is not only to open oneself to an understanding of what prompts them to hostility towards the limits thesis; it is also to seek some form of common understanding with those who deny the validity of environmental science, as a hoped-for basis for them to open themselves up to critical reflection on the nature of their beliefs.

2.5 An applied methodology

So far we have discussed an underlying philosophical framework (a philosophical anthropology which seeks to locate man on a metaphysical map of existence), a basic method of investigation (the hermeneutical interpretation of texts and text-analogues), and an investigative heuristic (an attentiveness to manifestations of a human need for meaning, especially in the face of death, belonging to existential social science). More detail is still required, however, on the precise character in which these formative elements are applied in the analysis of empirical matter in the chapters to come. What is actually happening in the next few chapters?

As discussed at the end of Chapter 1, it is the contention of this thesis that environmental sceptics—those most explicitly opposed to the limits thesis—are particularly sensitive to the challenges posed by the limits thesis to the modern world-view. It is the very radicalism of their rejection of the limits thesis, I am suggesting, that may reveal to us something about the radical challenges posed by the limits thesis for human self-understanding. This contention is the inspiration behind the empirical research focus of this thesis: over the next four chapters I am carrying out a reading of the discourse of opposition to the limits thesis, with the aim of deriving a picture of the world-view which they are defending, and are thus identifying as being threatened by the limits thesis.

In carrying out this analysis I have analysed texts and carried out a small number of interviews. I began by identifying a small group of authors with whose writings I was

already familiar, and who were widely acknowledged as arguing against environmentalists and the limits thesis: Wilfred Beckerman, Nigel Lawson, Bjørn Lomborg, Matt Ridley, and Julian Simon. In the case of Lomborg, Lawson, and Ridley an external confirmation of my categorisation was suggested by their being identified as prominent individuals ‘that have helped to delay and distract the public and our elected leaders from taking needed action to reduce greenhouse gas pollution and fight global warming’ (DeSmog 2020a) by a website (www.desmogblog.com) which aims to catalogue noted climate change sceptics. Beckerman and Simon, meanwhile, feature (alongside Lomborg and Ridley) in a detailed study of the network of right-wing think tanks that sponsor and promote the writings of environmental sceptics (Jacques *et al.* 2008). I then expanded this group by a further fifteen authors, whom I understood to articulate (with some notable variations) more arguments which were broadly opposed to the principle of unavoidable limits to growth: Ron Arnold, Freeman Dyson, Clive James, Herbert Meyer, John Maddox, Patrick Moore, Ted Nordhaus and Michael Shellenberger, Richard D. North, Benny Peiser, Leigh Phillips, Virginia Postrel, Ronald Reagan, Matt Sinclair, and Philip Stott. These additional authors were identified (and their status as opponents of the limits thesis verified) through their being referred to either (in positive terms) by other environmental sceptic authors or think tanks (such as the Global Warming Policy Foundation in the UK, or Competitive Enterprise Institute in the US), or (in negative terms) by critical analysts of environmental scepticism (Rowell 1996, Jacques *et al.* 2008, Foster 2017a). Table 3 (see the Appendix to this thesis) presents a list of these authors, the particular texts of theirs I examined, the years in which these were published, and a brief rationale for their selection.²⁶

I am not claiming any significance for this precise selection of texts; rather, I am following Boltanski and Chiapello in holding that ‘As work based on other corpuses has shown [...], the choice of source texts is not of great significance’, so long as they are ‘defined with reference to a common polity [and thus] contain roughly the same terms and refer to the same objects’ (2006, p. 153). The question which might then arise is:

²⁶ Additionally, having already drawn on these authors to establish my emerging theoretical analysis, I was able to bring into my analysis individual comments from a further range of environmental speakers as I came across them (sometimes featuring as quotations within secondary literature, whether cited approvingly by the environmentally sceptic authors named in Table 3, or critically by analysts of environmental scepticism). Where these comments seemed to provide particularly compelling illustrations of analytical points generated from my review of those texts I had reviewed substantially and in their entirety, then I used them as quotations in my text.

how can we be sure that all texts selected indeed belong to ‘a common polity’? In response I would point to Chapter 3, one of whose main objectives is to define the boundaries of the discourse I am analysing, in doing so providing a framework with which to identify all the texts within my analysis as belonging together.

Beginning during my gathering and analysis of texts, but overlapping with and informing it, to test and extend my analyses of these texts I carried out a number of interviews. In total I interviewed twenty people across a spectrum of opinion within environmental debate, of whom six occupied positions which could recognisably be categorised as anti-limits (or pro-growth). Only those six interviews are directly quoted from in this thesis, but the remainder have usefully helped me to map out an overall order of discourse within environmental debate, in which both ‘limitist’ and ‘growthist’ discourses are situated and their relationships defined (see Chapter 3, especially Table 1). Table 4 (see Appendix) sets out a list of my interviewees, with brief notes on my rationale for speaking to them, and references to how I have drawn on these interviews in this thesis.

In terms of the analyses I have produced from this work, the concept behind the following four chapters is to successively narrow down the focus of engagement (or travel down a theoretical funnel) towards an explicitly existential reading of these texts. The objective of Chapter 3 is to define the discourse which I am focusing on; this will clarify that, while the principal focus will remain on environmental scepticism, neighbouring discourses (for example, that of ‘ecomodernism’, which while not rejecting environmental science is keen to maintain that it can be reconciled with indefinite growth) will also be included within a reading of an overarching discourse of ‘growthism’. Chapter 4 then does initial analysis of this discourse, reading it for its vision of the good life and values it is defending. In Chapter 5 I seek to reconstruct the ontology of this discourse, specifically asking what can its vision of the relationship between humanity and the environment be to enable the belief that economic growth can go on indefinitely? Then in Chapter 6 I examine the emotion which is invested in defending the idea of indefinite growth, and read this as reflecting associations between an end to growth and existential angst about death.

In each of these four chapters I draw on established methodological frameworks from the disciplines of interpretive social science: discourse analysis in Chapter 3;

rhetorical analysis in Chapter 4; what I am calling ideational analysis in Chapter 5; and what most explicitly resembles John Carroll's metaphysical sociology in Chapter 6. These are defined at greater length in each respective chapter. Why such methodological variety? There are two reasons. The first is that, in each case, these were ready methodological materials at hand. The research objective in each chapter came first, and then I went looking for established methodological frameworks appropriate to my focus, my analysis then proceeding in dialogue with my adopted method. The advantage of using these chosen methods was that they offered a set of useful tools for extracting insights, a process by which to guide my investigation, and a certain recognisable status and academic language with which to describe my findings. Such methodological eclecticism—or indifference to strict, pre-determined methodological boundaries—draws support from Levy's idea of practical philosophy. For Levy, the methodological approach to take when analysing a phenomenon emerges in the process of reckoning with it: 'the only way to acquire knowledge in any field is to develop methods and concepts suitable to its exploration'. The critic should aim simply for a form of analysis which is

adequate to its experienced object. What this form of discourse will look like, the elements it will have to take into account, cannot be laid down a priori. Only through empirical investigation does the theorist come to learn the specific requirements of his science, overcoming the interpretative problems that the object of study puts in his way. (Levy 1993, p. 67.)

Continuing his pragmatic line, Levy argues that the warrant for whichever methodology is chosen is whether it works—'cognitive advance, and not fidelity to a favoured model' (1993, p. 67).²⁷ Levy's pragmatism is backed up by Taylor, when he writes that in 'any hermeneutic explanation, interpretive plausibility is the ultimate criterion' (Taylor 1985a, p. 7): is the reading it provides compelling? That is the substantial thing to focus on; and like the fixing on a method itself which Levy suggests can only be decided in the process of producing an interpretation, so the plausibility of an interpretation—and thus the effectiveness of the method used in making it—can be judged only in the reading of it.

²⁷ Such arguments are to an extent echoed, and this time in the specific context of analysing environmental debate, by Jennifer Peebles (2015). Drawing on Milstein's (2009) survey of a diverse range of methodologies used within the broad discipline identified as environmental communication studies, Peebles writes that: 'The complexity of environmental problems [...] invites scholars to bring diverse conceptual, theoretical, and methodological frameworks to the task of understanding and mitigating these expansive concerns. [...] Each has its perceptual strengths and limitations, leaving it to the discretion of the critic to formulate an interpretive approach that provides the most insight into the subject being analyzed' (2015, p. 39).

The second defence of my methodological eclecticism is that it isn't all that eclectic. The specific approaches adopted in these chapters have their own disciplinary boundaries and academic sub-cultures, but they all share certain common foundations. Recalling Blakely's principles for an interpretive research programme, four shared principles predominate. The first is that ideas matter: we are not just the products of our socio-economic environment, but as intellectual beings respond to the beliefs we have about the world and ourselves, beliefs which have a reality of their own and a degree of independence from our social circumstances. Second, language matters: as intellectual beings we think through language and, in that sense, language thinks through us—a close reading of the language used within individual texts can therefore tell us much about an overarching framework of meanings which stand behind them. Third, we live in thought-worlds: while our mental worlds are entirely subjective realms, in that we are cultural beings who think through language, our mental worlds participate within collective thought-worlds—thus in studying the pronouncements of individuals we may learn about elements of cultural belief-systems which have an objective reality that persists through time. Fourth, our understanding of the world is heavily mediated through narrative: to make sense of how others make sense of the world we thus need to look for the narratives that underlie individual arguments. Furthermore, all of these principles can be wrapped up within the overarching approach of hermeneutics, the spirit animating the analysis in all four chapters.

The ultimate aim of these four chapters is to arrive at a picture of a world-view which the opponents of the limits thesis are defending. Once this is assembled we find ourselves on the territory of philosophical anthropology proper: this is the focus of Chapters 7 and 8. In Chapter 7 I examine the world-view of growthism that has been sketched in the preceding chapters, and bring it into contact with philosophical-anthropological discussions of epochal world-views. Specifically I examine the analysis of an overarching world-view of modernity generated principally by Karl Löwith (1949) and Hans Blumenberg (1985 [1976]). In the light of this I make a reading of the discourse of the opponents of the limits thesis, which understands it as defending key elements of modernity: a modern metaphysics which views nature as being materially infinite, the 'immanence of the infinite' as it has been called (Brient 2002); and a modern theodicy, which holds that humankind has the power and responsibility to take care of itself, and eliminate the ills of the world, through scientific progress. In Chapter 8 I extend this

discussion of the epochal world-view of modernity by bringing in the discussions on a human need for immortality ideologies from existential social science. In particular I work with Bauman's (1992) analysis of the 'secularisation' of beliefs in immortality within the modern world-view—beliefs in enjoying a vicarious sense of immortality by identifying with the ongoing progress of a collective human project, which came largely to displace belief in a personal afterlife. Within this theoretical structure I make a reading of the world-view of growthism which focuses on its aversion to the threat which the limits thesis poses to the idea of progress, and explore the implications this has for modern immortality ideologies. In conclusion I interpret this growthist concern as ultimately a defence of the modern theodicy—and suggest that growth is clung on to as an idea with quite such force because to lose it would be to lose a functional theodicy, and with that to be plunged into anomic despair.

2.6 Conclusion

This chapter defined the methodological and philosophical framework that supports this thesis. . It suggested that what was required, to get to the bottom of the social resistance to the limits thesis, was a form of interpretivist social science which drew on the insights of philosophical anthropologists, such as Charles Taylor. It then outlined three methodological elements that would characterise the particular form this would take here. First was a discussion of an investigative heuristic (an attentiveness to manifestations of a human need for meaning, especially in the face of death), which was drawn from 'existential social science'. Second was an outline of the underlying philosophical framework within which this investigation would be embedded: a philosophical anthropology which seeks to locate man on a metaphysical map of existence. Third was a description of the basic method of investigation to be pursued throughout: the hermeneutical interpretation of texts and text-analogues, drawing in particular on the philosophical hermeneutics of Charles Taylor. Finally, there was a discussion of the way in which these formative elements are to be applied in the analysis of empirical matter in the chapters to come.

3: Mapping the discourses of growthism

We now reach the point in this thesis where the positive analysis of its subject matter can begin. This is the first of four chapters which subject the arguments and language of those who explicitly oppose the limits thesis to successive passes of—increasingly interpretive—analysis. The analysis in this chapter begins from the most general and straightforward perspective. Its purpose is to define what the subject matter for further analysis is. In doing this it will map out the main discourses that comprise an overarching order of discourse defined here as ‘growthism’. This will define the kinds of themes, texts, and speakers I am interested in investigating. In doing so it will pay attention to the differences which distinguish one growthist discourse from another. By acknowledging differences among the main discourses which oppose the limits thesis I hope to underline what, despite grounds for potentially sharp disagreements between them, they share in common.

This chapter is structured as follows. Section 3.1 sets out my approach to the methodology used here, identifying this closely with the approach taken by John Dryzek (2013). Not only does Dryzek provide the technical model for the kind of discourse analysis I am using, but he provides a theory to support an interpretive analysis of these discourses, suggesting that opposition to the limits thesis can be read as a defence of progress. Finally, Dryzek’s difficulties in accounting for the differences in discourse among different types of opposition to the limits thesis provide an additional stimulus for the original analysis attempted in the rest of the chapter.

In 3.2 I provide an initial, high-level categorisation of discourses within the ‘limits to growth debate’. In this I attempt the novel move of bringing both environmentalist and anti-environmentalist views together in one integrated analysis. In doing so I aim to reflect more ambiguous discourses that may accept some premises of environmentalism, yet reject—whether absolutely or conditionally—the limits thesis itself. In this analysis I introduce the classifications ‘growthism’ and ‘limitism’, and outline a four-fold order of discourse, with radical growthism and radical limitism occupying the extremes of debate, and moderate growthism and moderate limitism spanning the ground in the middle.

In 3.3 I focus on the discourses of growthism, bringing my analysis ‘down to earth’

by attempting to paint pictures of three recognisably real-world discourses to be encountered in environmental debate. The most influential of these I present as ‘environmental scepticism’ (defined by an absolute rejection of the limits thesis, a denigration of mainstream environmental science, and often by neoliberal political economy), and ‘ecomodernism’ (defined by a conditional rejection of the limits thesis, a respect for mainstream environmental science matched with an optimistic belief in the potential for technology to resolve environmental problems, and often by a centrist/centre-left belief in the role for state investment in new technology). I next present a more marginal discourse, ‘Promethean socialism’ (defined by a utopian attitude towards the potential of planning and technology to overcome natural limits, within a socialist political economy).

Finally, in 3.4 I conclude by observing what unites these three discourses of growthism, despite often marked causes for disagreement between them: their underlying defence of the idea of progress.

3.1 A model of environmental discourse analysis

John Dryzek’s *The Politics of the Earth* (2013), a central text in the analysis of environmental discourse (Barry 2007), provides the starting point for the analysis presented in this chapter. To begin to appreciate why this is we need first to place Dryzek’s approach within a highly-contested methodological field, whose practitioners hail from diverse disciplines and methodological traditions (Silverman 1993, Phillips and Hardy 2002, Gill 2005, Potter 2008, LeGreco 2014). Theoretical surveyors of this field tell us ‘there is no single “discourse analysis”’ (Gill 2005, p. 172), that it is ‘so heterogeneous, it is difficult to arrive at a clear definition of it’ (Silverman 1993, p. 121). Given this diversity of possible approaches it is important to be clear about which form one is adopting from the outset. To begin with, the concept of *discourse* being used here is drawn from Dryzek: a discourse is ‘a shared way of apprehending the world. Embedded in language, it enables those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts’ (Dryzek 2013, p. 9). In this sense it can be understood as a way of reproducing collective meanings.

As for discourse *analysis*, some theorists have attempted to sort this diverse array

into a handful of main forms with reference to a selection of key criteria. Phillips and Hardy (2002, p. 19) ‘present a framework that categorizes these differences according to two key dimensions: the degree to which the emphasis is on individual texts or on the surrounding context and the degree to which the research focuses on power and ideology as opposed to processes of social construction.’ Similar analysis is given by Glynos *et al.* (2009, pp. 5–6). Altogether, this yields a broad schema featuring two axes.

Along the first, at one extreme the focus is on producing ‘thick’ analyses of particular examples of ‘micro-level’ or ‘little-d’ discourse, while at the other it is on a wider analysis of ‘macro-level’ or ‘Big-D’ Discourse, which aims at understanding the significance of a discourse at the level of society as a whole (LeGreco 2014, pp. 71–72). Where the focus is on this macro level, the analysis may be aimed at making sense not just of one discourse but of an ‘order of discourse’, mapping the discourses which compete for prominence over the same thematic terrain by comparing their defining differences and how they oppose one another (Jørgensen and Phillips 2002, pp. 138–74).

Regarding the second axis, at one end are various schools of critical or emancipatory analysis, which aim at exposing the power dynamics by which certain discourses become hegemonic; examples include Critical Discourse Analysis, associated with figures such as Fairclough (2013); Foucauldian Discourse Analysis (Willig 2013); and Political Discourse Analysis (Glynos *et al.* 2009), developing out of the Essex School of discourse analysis (Howarth *et al.* 2000), and drawing on the work of Laclau and Mouffe (2001). At the other pole are schools of interpretive or constructionist analysis, those who are ‘more interested in understanding the way in which discourses ensure that certain phenomena are created, reified, and taken for granted and come to constitute that “reality” than ‘exploring who benefits or is disadvantaged by a socially constructed “reality”’ (Phillips and Hardy 2002, p. 22).

Having sketched this broad schema we can identify Dryzek’s approach as operating both at the macro level and in the interpretive mode of analysis (placing him in the category Phillips and Hardy call ‘Interpretive Structuralism’). Dryzek’s focus is clearly on the macro end of the scale: ‘My own studies lack the rich detail’, he tells us, ‘of those who ‘examine discourse carefully in the context of a particular issue [...] However, there is room for breadth as well as depth in analyzing environmental discourse, looking at the big picture rather than the details’ (Dryzek 2013, p. 11). Analytically, as well, he

demonstrates a clear interpretivist interest in the ideational contours of discourses in themselves ('My intent is to lay out the basic structure of the discourses that have dominated recent environmental politics, and present their history, conflicts, and transformations'), along with a hermeneutical faith in meaningfulness as the ultimate warrant for his analysis ('I seek vindication only in the plausibility and coherence of the stories I tell') (Dryzek 2013, p. 11).

Given the philosophical emphasis in this thesis on the importance of ideas in themselves, and of the hermeneutical analysis of people's motivation for believing in certain ideas, it makes it a straightforward choice to adopt the basic approach to discourse analysis exemplified by Dryzek. Accordingly (as developed from 3.2 onwards), this chapter will attempt to follow Dryzek in mapping the key ideational features of the main, rival discourses found within the limits to growth debate.²⁸

But Dryzek is not being adopted as a model here solely because his theoretical approach to discourse analysis fits with the philosophical basis of this thesis; it is also because his is one of the most influential approaches specifically to *environmental* discourse analysis (e.g. Stevenson 2015). Most importantly for my purposes is Dryzek's observation (2013, p. 11) that 'Environmental discourse is broader than environmentalism' and 'even extends to those hostile to environmentalism'. This leads him to include an anti-environmentalist discourse—which he labels 'Prometheanism'—within his analysis of environmental debate as a whole. This makes his work something of a rarity within this field; not only do studies which focus mainly on environmentalist thought tend not to include anti-environmentalism in their analysis (e.g. Clapp and Dauvergne 2005; Connelly and Smith 2002; Dobson 2007; Freedon 1996; M. A. Hajer 1995; M. Hajer and Versteeg 2005), but those which focus on anti-environmentalism (e.g. (Brick 1995, Ehrlich and Ehrlich 1996, Rowell 1996, Switzer 1997) tend to focus on it alone.

According to Dryzek, 'Prometheanism' is an overarching outlook which understands it as being both right and possible for humans to subdue nature and increase

²⁸ One difference of emphasis within this categorisation ought to be mentioned, however: beginning in section 3.3 in this chapter—and, even more, in the three chapters of analysis which succeed it—the focus of analysis will not remain solely on the macro level. Instead, it will occupy a 'meso level' of analysis (Christensen *et al.* 2004, LeGreco 2014), in which the focus ranges between, on the one hand, the relationships among competing discourses at a social level, and on the other, the particular examples of talk and text which illustrate such relationships in concrete terms.

material wealth indefinitely through technological ingenuity: ‘Prometheans have unlimited confidence in the ability of humans and their technologies to overcome any problems—including environmental problems’ (Dryzek 2013, pp. 52–53). This, he suggests, has been a hegemonic belief in the western world for most of the modern period (Dryzek 2013, p. 53). It was only with the development of environmentalism at the turn of the 1970s, Dryzek argues (2013, p. 64), that ‘Promethean discourse was [...] pressured to articulate its key tenets for the first time’; thus it is only in response to environmentalism that Prometheanism exists at all, in the sense of an explicit discourse to identify with or against, rather than as a more implicit set of unquestioned assumptions.

In Dryzek’s analysis Prometheanism, as it were, both precedes and exists in response to the discourses of environmentalism. As regards its earlier, implicit manifestation (i.e. over the *longue durée* of modernity before the 1960s), Dryzek identifies this with ‘capitalism and the Industrial revolution’, the ‘unbounded faith in the ability of humans to manipulate the world in ever more effective fashion’, ‘human progress’, and ‘our dominant institutions: a capitalist economy geared to perpetual economic growth, and a political system whose main task is to facilitate the conditions for that growth’ (Dryzek 2013, p. 64). In its explicit (post-1960s) phase, he associates the ‘Promethean counterattack’ with a neoliberal defence of free markets, an opposition to population controls, an advocacy of climate change adaptation instead of mitigation, and an ‘organized denial’ movement which seeks to undermine environmental science in the interests of polluting industries.

What is particularly valuable within Dryzek’s treatment of Prometheanism is the argument that in its contemporary, explicit form, it mobilises—and thus bring into relief—central elements of modern thought which were previously understood only implicitly. In studying this discourse, this argument maintains, we can not only learn about the points of environmentalist argument that it is reacting against, but the points in a preceding history of modern thought against which the discourses of environmentalism have themselves developed in reaction.²⁹

²⁹ Dryzek’s argument as to the merely implicit nature of Promethean discourse prior to the emergence of contemporary environmentalism has been critically extended by Meyer (2016), who finds copious examples of Promethean discourse (preoccupied with ideas of conquering, manipulating, and re-engineering nature according to human design) stretching back far into the nineteenth century. Meyer’s findings can still be interpreted as complementary to Dryzek’s thesis, however. The historical discourses Meyer identifies do resemble contemporary anti-environmentalism in their being animated by an advocacy of progress and

A third reason to start this chapter with the work of Dryzek is the way in which—unintentionally—he underlines the difficulties experienced in existing approaches to those opposed to the limits thesis. While containing some richly perceptive analysis, Dryzek’s typology of discourses offers a few analytical curios. The most remarkable relates to his concept of ‘Promethean environmentalism’. This is something related to but distinct from the Prometheanism which Dryzek sees as being the explicit opposition discourse to environmentalism. While initially representing the antithesis to the limits thesis, Prometheanism subsequently evolved, Dryzek tells us; such that it later ‘accommodates recognition of environmental problems, and a high-technology response to them’ (Dryzek 2013, 19). Strict Prometheanism still exists, he recognises; and those who articulate it will tend to downplay the seriousness of environmental issues or dismissively insist that they ‘can be left to the market’. But now we can also find ‘Promethean environmentalists’: while taking environmental problems seriously, they insist these can be solved through technological development. As examples of such Promethean environmentalists, Dryzek (2013, p. 58) names Bjørn Lomborg, George Monbiot, and the Breakthrough Institute.

This is a curious categorisation, since these three named parties are, on the surface, highly distinct from one another. Dryzek sees Lomborg, the self-styled ‘environmental skeptic’, as a ‘true sceptic’; he thus takes Lomborg’s claims to be an environmentalist at face value, contrasting him in this respect with an ‘organized denial movement’ which Dryzek sees as being dogmatically anti-environmentalist. As discussed in Chapter 1, however, Lomborg’s arguments have been severely criticised by environmental scientists, and a closer reading (which we will come to, in Chapter 4 in particular) suggests them to be polemical in their opposition to environmental policy proposals, particularly where these include public spending. A more common view of Lomborg sees him as a *contributor* to an ‘organized denial movement’ rather than as belonging to any school of environmentalism (DeSmog 2019b).

As for Monbiot, Dryzek places him within the category of Promethean environmentalism on the strength of Monbiot’s decision (Monbiot 2011) to endorse nuclear power—in turn motivated by the environmentalist goal of mitigating climate

modernity against an opposing discourse of limitations (in this case represented by voices of conservatism). But what they lack—and thus what appears to make contemporary Prometheanism unique—is a *defensive* character, in which their proponents are forced to explicitly justify their underlying beliefs against a contrary belief that progress itself is an outmoded idea.

change by replacing fossil fuels as a source of energy. But more generally, Monbiot is well-known as ‘one of Britain’s leading environmental and political activists’ (Bidwell 2018), an anti-capitalist who advocates radical government action to restrict fossil fuel use, and to reserve large areas of land for rewilding (Monbiot 2013, 2017). It seems mistaken to place him and Lomborg as theoretical bedfellows.

Then there is the Breakthrough Institute, founded by environmental lobbyists Ted Nordhaus and Michael Shellenberger; Dryzek sees them as Promethean environmentalism’s most forceful advocates. In this respect he draws attention to Nordhaus and Shellenberger’s vision of a ‘future of high-technology, clean energy abundance’ as set out in their book, *Break Through* (2007). There, Nordhaus and Shellenberger endorse the importance of ‘ecological thinking’, but insist that the ‘philosophy of limits [...] must be left behind’ (2007, pp. 238–9). While stressing the urgent need to reduce greenhouse gas emissions, they argue this should be achieved, not by reducing consumption, but by decarbonising it, through large-scale public investment in clean energy systems.

Dryzek is surely right to identify the Breakthrough Institute as the most central representatives of Promethean environmentalism; they conform neatly to his definition. Neither Lomborg nor Monbiot does, however; and, moreover, the three differ sharply from one another, Monbiot most of all from the other two. Something appears to be awry in Dryzek’s typology. Given his prominence in the field of environmental discourse analysis this could perhaps be seen as suggestive of a weakness in the field as a whole. If someone as expert—and thus knowledgeable about other leading attempts to categorise environmental discourse—can produce analysis which sounds such a wrong note, then this itself perhaps suggests there may be scope for new attempts at making sense of this intellectual terrain.

3.2 From growthism to limitism: a high-level mapping

A repeated theme in analyses of environmental discourse is to carve up debate in terms of a binary opposition between radical and moderate environmentalism.³⁰ Dryzek presents

³⁰ See, for example, the divisions between ‘eco-radicals’ and ‘environmental moderates’ (Lewis 1992); ‘deep ecology’ and ‘shallow ecology’ (Naess 1973); ‘dark green’ and ‘light green’ (Dobson 2007); ‘ecocentric

a variation on this theme, in which a basic binary opposition (between ‘Reformist’ and ‘Radical’ forms of environmentalism) is subdivided by two further binary oppositions (yielding four forms, which could be translated effectively as extending between ‘moderate-reformists’ at one pole and ‘extreme-radicals’ at the other). As overarching thematic divisions, these are to an extent artificial; they have a valid analytical function, in terms of organising the defining currents of thought within this field, but it would be unlikely to identify any particular groups or individuals as representing any of them in actual debate. Accordingly, Dryzek breaks these overarching discourses down into a further nine ‘real-world’ discourses, more recognisably mapping onto the actual participants in debate, with the anti-environmentalist discourse of Prometheanism included as an adjunct without a parent overarching discourse.

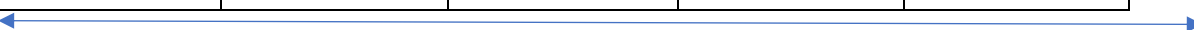
This is a model I have adopted, but with some important modifications. **Figure 1** presents my version of high-level discourse analysis; this is broken down into three ‘real-world’ discourses in the next section. This has been generated by both drawing on my familiarity with environmental discourses, following several years’ engagement with the limits to growth debate in a private and professional capacity,³¹ and by thematic exploration of interviews with twenty participants (chosen as representative of a range of different positions) in environmental debate, as well as a selection of related texts.

environmentalism’ and ‘technocentric environmentalism’ (O’Riordan 1981); ‘Deep Ecology’ and ‘reform environmentalism’ (Killingsworth and Palmer 1992); ‘strong’ and ‘weak sustainability’ (Neumayer 2013).

³¹ This includes a period, between 2006 and 2009, as a Committee Specialist, advising and drafting reports on behalf of the Environmental Audit Committee of the UK House of Commons. In this capacity I observed or spoke directly on environmental issues with politicians, civil servants, senior business officials, diplomats, representatives of environmental NGOs, economists, environmental scientists, energy specialists, and climate change sceptics. During this period I also published three journal articles specifically on environmental scepticism (Douglas 2007, 2008, 2009).

Table 1: High-level mapping of orders of environmental discourse

	GROWTHISM		LIMITISM	
	Radical growthism	Moderate growthism	Moderate limitism	Radical limitism
Outlook towards...				
Limits thesis	Total rejection	Conditional rejection	Agnostic overall; believer in limits in individual cases	Total acceptance
Environmentalism	Anti-environmentalist	Environmentalist	Environmentalist	Environmentalist
Environmental science	Disrespects it as being politically corrupted	Respects its authority, though tends not to pay attention to any scientific suggestion of insuperable limits	Respects its authority	Respects its authority, though sceptical of science that supports technologies with potentially profound environmental risks (e.g. nuclear, GM, geoengineering)
Economic growth	Strongly in favour	Strongly in favour	Does not deal with it overall	Believes it must cease
Technology	Firm believer in the potential of new technology	Firm believer in the potential of new technology	Does not challenge it overall	Ranges from cautious to 'neo-luddite'; strong advocate of 'precautionary principle'
The future	Highly optimistic	Highly optimistic	Cautiously optimistic / agnostic	Generally pessimistic
Humanity	Lionises humanity	Positive about humanity	Acknowledges human potential for destruction through greed and cruelty, but positive about human potential for good	Can incline towards thinking negatively about humanity, or stressing the equal or greater importance of other facets of nature
Political identity	Generally right-wing, but may also be socialist	Generally centrist/centre-left	Generally apolitical	Predominantly Green / left-wing



No limits

Absolute limits

What this table presents is a four-fold typography, ranging from ‘Radical growthism’ at one extreme (which believes that economic growth could potentially go on forever), to ‘Radical limitism’ at the other (which believes that growth must urgently be stopped/reversed), with two more moderate positions in between. There are two elements to this analysis which stand out in particular as being novel, and which differentiate it from Dryzek’s version: the terminology, and the treatment of anti-environmentalism.

The immediate feature in want of explanation is the use of the rarely-used term ‘growthism’ and the still-rarer ‘limitism’. ‘Growthism’ is a term which, at its most essential, stands for the principle of an absolute lack of foreclosure on mankind’s collective possibilities. More prosaically, for the most part it denotes support for economic growth as a primary ideology, coming before distinct political ideologies concerning how this growth should be maximised and its benefits distributed, and thus spanning both left and right (Buttel 1978, Albrecht 1982, Douglas 2007, Daly 2015, 2019, Dunlap and McCright 2015, Daly and Kunkel 2018, Dietz 2018).³²

‘Limitism’, meanwhile, appears not to have any provenance in analysis of environmentalism.³³ It is here being used to denote the adoption of the limits thesis as a core belief. This belief is certainly one of the most essential elements of environmentalism;³⁴ but definitions such as this also commonly identify one or more

³² Daly defines growthism as the belief ‘that growth is the costless, win-win solution to all problems, or at least the necessary precondition for any solution’ (Daly 2019). A definition of growthism I have previously given (Douglas 2007, p. 550), subsequently quoted by Dunlap and McCright (2015), is as follows: ‘Its central tenet is that the global economy can keep on expanding indefinitely—for all practical purposes, forever. Its second principle is that growth is good, and that more growth is always better than less. Its third principle is that increasing economic growth should be society’s overriding priority.’

³³ The one reference I have found to ‘limitism’ is made in an advocacy of ‘political limitism’, which is to say an acceptance, from the perspective of Augustinian theology, of the limits to the perfectibility of human life which politics could ever aspire to achieving (McIlroy 2015). This argument has relevance to a critique of growthism; however it does not map onto the environmentalist discourses which are the focus of the use of ‘limitism’ in the present context. More relevant—though still distinct from the environmental limitism outlined here—are Robeyns’ (2017) ‘limitarian doctrine’, which entails the view that it is morally objectionable to be rich, and Kallis’s (2019) ‘limitarianism’, which extends this doctrine to embrace a moral case for limiting wealth, power, and resource extraction.

³⁴ Dobson writes that ‘the belief that our finite Earth places limits on industrial growth’ is ‘a foundation-stone of radical green politics [...] This finitude, and the scarcity it implies, is an article of faith of green ideologues, and it provides the fundamental framework within which any putative picture of a green society must be drawn’ (Dobson 2007, 52). Freedon (1996, 527), equally, sees a recognition of the finitude of natural resources, and the concomitant need to limit their exploitation so as to preserve ‘the integrity of

other core features of environmental belief. For Connolly and Smith (2002, p. 52) the other of the ‘two core principles of green political thought’ is ‘the ethical basis of our obligations to the non-human world’. Similar observations are made by others, e.g. Freedman’s (1996, p. 527) identification of nature as the overriding factor in guiding human conduct as another element in environmentalism’s core beliefs. If my mapping exercise were plotted against an axis of belief in *this* principle, ranging from a belief that the interests of humans should always take priority over non-human nature at one end, to the belief that non-human nature should always be preeminent at the other, it would undoubtedly result in a different constitution of discourses and subdiscourses.³⁵

In using the term ‘limitism’, then, I am deliberately not seeking to capture the full range of environmentalist discourse. What I am interested in is focusing on one primary dimension of environmental debate to the exclusion of all others. This is in keeping with the purpose of this research project: my hope is that isolating limitism as the essence of one pole of debate will simultaneously isolate growthism as the essence of the other.

A significant feature of this analysis is that in it I have integrated an explicitly anti-environmentalism discourse (‘radical growthism’) within a single overarching order of environmental discourses, stretching out in sequence according to belief in the limits thesis. This appears to be a novelty; while Dryzek acknowledges that environmental debate extends beyond environmentalists to encompass their opponents, the anti-environmentalist discourse he christens ‘Prometheanism’ remains outside his schema of four basic environmental discourses, as well as the sub-discourses he identifies as hanging off them. By including an explicitly anti-environmentalist discourse *within* my schema, I hope to explain better the relationships between environmentalist and anti-environmentalist discourses. In particular, this should afford a greater clarity on the dividing lines between anti-environmentalists, such as Lomborg, and those, such as the Breakthrough Institute, who accept the reality of environmental limits but believe they may be overcome indefinitely through promoting ‘innovation and smart policy’

nature and of forms of life’, as one of the defining measures of environmental thought. Such observations are indeed commonplace, given the very centrality of the belief they are observing.

³⁵ A related but distinct division which emerged from my analysis of texts and interviews was that between an environmentalism based on a love and defence of local place (and the relationship with the natural world one finds there, or the memory of such an experience), and one based on an abstract perception of the holism of ecosystems and limits to global resources (resulting, by way of logical syllogism, in a mentality which perceives all human impacts on the environment as accumulating risks).

(Breakthrough Institute 2019).

In the context of this work, in which my interest is in the resistance to the limits thesis, for the rest of this thesis I will focus solely on discourses of growthism. Further analysis of the defining features of these discourses (and the dividing lines between them) will now be done in the process of sketching out three ‘real-world’ discourses: environmental scepticism, ecomodernism, and Promethean socialism.

3.3 Three ‘real-world’ discourses of growthism

Environmental scepticism

This discourse has already been introduced to some extent; it formed the primary subject of the first section of Chapter 1.³⁶ That featured a literature review of analyses of a counter-movement, comprising both organised campaigns promoted by elites and the articulation of arguments by ideologically-receptive members of the public, which explicitly opposes environmentalism. To add to this picture now by subjecting it to discourse analysis means mapping out those characteristic features which define it, both positively and negatively, and which establish its dividing lines with neighbouring discourses.

The radicalism of environmental scepticism is revealed by a few signature features. First among these is an intensely ideological approach to science, most apparent in a rejection of the intellectual authority of established climate scientists. Examples may easily be found by examining the reception given to the reports of the Intergovernmental Panel on Climate Change (IPCC) (e.g. Small 2018). One report (IPCC 2018), which concluded on the need for drastic reductions in global fossil fuel use, drew responses such as ‘the usual farrago of dubious science, wailing hysteria and worryingly eco-fascistic policy prescriptions’ (Delingpole 2018) and ‘PC claptrap’ (Lawson 2018), with its recommended actions being decried as ‘almost certainly more harmful than the climate change they set out to mitigate’ (Constable 2018). Accompanying this is a fatalistic attitude which states that if climate change is real then we should focus solely on

³⁶ As established in Chapter 1, I am sceptical of the claims of this discourse to the title of scepticism, but am deliberately employing this term for its practical advantages in fostering an understanding of a group to whose polemical arguments I am generally thoroughly opposed.

adaptation rather than mitigation, as there is nothing we can or should do to stop it (Stott 2003, North 2007, Lawson 2008).

For most of the speakers in this discourse this rejection of environmental science does not mean disrespecting science (or an idealised conception of it) as a whole; often it goes along with praise for dissenting scientists who support minority views, for instance contesting the link between CO₂ emissions and climate change. The fact that such scientists are in a decided minority is adduced as evidence of their integrity; that they are going against the majority of climate scientists is taken as evidence of a courageous resistance to politically-corrupted 'groupthink' (Crichton 2007).

Another defining element of this discourse is the absoluteness of its rejection of the limits thesis, and the extreme nature of the opposite idea of unending growth and abundance posited instead ('Natural resources are not finite [...] It's reasonable to expect the supply of energy to continue becoming more available and less scarce, forever' (Simon 1996, pp. 54, 181)). Where limits are accepted theoretically, they are treated as not having real-world implications for us in practice ('No, no one is saying that there are no physical limits to growth. [...] But economic growth isn't physical growth, it's growth in value' (Worstell 2010, pp. 49-50)). The rationale for this confidence is the absolute faith of this discourse in the potential of technological innovation ('There is an infinite supply of improvements to technology which will raise living standards' (Ridley 2020)). This is associated with a faith in humanity as having the power to overcome all its problems ('Man has the ability to tackle disease, overcome natural disasters and eliminate scarcity. To the extent that these remain problems it is because humans have not gone far enough rather than because they have gone too far' (Ben-Ami 2012, pp. 145-6)).

There is a polemical edge in this discourse's attacks on environmentalism, speakers often revelling in a 'bad manners' tone of mocking scorn (journalists covering climate change 'are so celebrity-conscious that they would supply [environmentalist] Tim Flannery with a new clown-suit if he wore out the one he is wearing now' (James 2017, p. 9)). Environmentalism is often denied any legitimacy whatsoever, depicted as an 'eco-scam' (Bailey 1993). Environmentalists are frequently depicted as cynical hucksters, or warped fanatics, or both at once—"This tangled triangle of unelected busybodies claims to have the interests of the planet and the countryside at heart, but it is increasingly clear that it is focusing on the wrong issues and doing real harm while profiting handsomely'

(Paterson 2014). Turning tables on those who would give them pejorative labels such as denialists, speakers in this discourse often refer to all who affirm the dangers of climate change as ‘alarmists’, or (suggestive of climate science itself being a form of quackery) as ‘warmists’. For this discourse the authority of the most esteemed intellects counts as nothing if they should endorse unwelcome positions:

Physicist Stephen Hawking, who has been out of the headlines since receiving severe heatstroke and sunburn outside his house in 2004 and therefore thinks he knows a thing or two about global warming, says that ‘the worst-case scenario is that Earth would become like its sister planet, Venus, with a temperature of 250 [degrees] centigrade, and raining sulfuric acid.’ Thanks, Stephen, that’s very useful. (Williams 2008, p. 8.)

In terms of its positive propositions this discourse is defined by a defence, ranging between enthusiasm and fundamentalism, of growth, technology, human potential, and an optimistic vision of the future. Sometimes this is imbued with an almost desperate tone, suggestive of an embattled rear-guard action against dominant currents in society that threaten to undo the legacy of the West.³⁷ At other times growthism’s celebration of itself becomes jingoistic, as all and any barriers to the expansion of humanity’s empire are imaginatively swept aside:

Technologies I cannot even conceive will be commonplace and habits I never knew human beings needed will be routine. Machines may have become sufficiently intelligent to design themselves, in which case the rate of economic growth may by then have changed as much as it did at the start of the industrial revolution—so that the world economy will be doubling in months or even weeks, and accelerating towards a technological ‘singularity’ where the rate of change is almost infinite. (Ridley 2010, p. 354.)

A last signature element of this discourse is its right-wing political identity. Predominantly this has taken the form of a ‘free market’ political economy moulded by Friedrich von Hayek and the wider ‘neoliberal thought collective’ (Mirowski and Plehwe 2015). The traces of this influence are apparent not only in positive defences of growth and the market, but also in the framing of environmentalism as a transmutation of socialism—the ‘green road to serfdom’ (Postrel 1990).³⁸ More recently, reflecting the

³⁷ See books such as *The War on Progress* (Meyer 1979), *The Future and Its Enemies* (Postrel 1998), *The Enemies of Progress* (Williams 2008), and *Ferraris for All: In Defence of Economic Progress* (Ben-Ami 2012).

³⁸ There are some exceptions to this political characterisation, a prominent example being the socialist environmental sceptic Alexander Cockburn (2008). Another example is Sonja Boehmer-Christiansen, emeritus reader in geography at the University of Hull. While she has directly questioned mainstream

rising prominence of the alt-right, this discourse has taken on more of a populist character (Runciman 2017).³⁹ Expanding into this territory, especially when combined with a repudiation of mainstream science, means this discourse can at the margins bleed into crackpot theorism—represented notably by the followers of Lyndon LaRouche, for whom environmental scientists, multi-national corporations, and the British royal family are engaged in a conspiracy against the public (Sweet 2018, Feidt 2019). On these extreme margins of political discourse, radical right and left may merge; as reflected by the contributions of Piers Corbyn, a member of the LaRouchies’ Facebook group (Sweet 2019):

I tell you that man-made climate change does not exist. The climate policy we have is not to control climate—that can't be done, it's a natural process—it is to control *you*, to tax you, to make more money out of you, to order you around, to control you through 5G, which is deemed to be part of a sustainable economy, 5G to watch you everywhere. (Corbyn 2019.)

Ecomodernism

Something like ecomodernism has also already been encountered—earlier in this chapter. Dryzek’s concept of Promethean environmentalism covers some of the same ground, referring to a discourse which, while granting environmental limits more reality than does environmental scepticism, still believes in the power of technology to ‘extend [...] or to evade those limits altogether’ (Leadbeater 2003, p. 185).

The name ‘ecomodernism’ is preferred here to Promethean environmentalism partly owing to its greater prominence. This is thanks to its being adopted by Ted Nordhaus and Michael Shellenberger, founders in 2003 of the Breakthrough Institute, as the name for their brand of environmentalism (see Breakthrough’s *Ecomodernist Manifesto* (2015)). Both this name and the concept it refers to echo ‘ecological

climate science, and published climate sceptic articles when editor of the journal *Energy and Environment* (DeSmog 2018), she describes her own politics as being on the left. At the same time, she acknowledges that she is in a political minority among those she views as being like-minded on climate change. As she recounts a discussion with an economist attached to an environmentally sceptic think tank: ‘We didn't part as enemies but I just couldn't listen to him anymore. You know, he tried very hard to persuade me, not on the scientific side but to look at this relatively right-wing or conservative economics. And this to me is a problem, that this whole environmental thing has been, hijacked is maybe too strong a word, by right-wing economics, and I don't see why that should be’ (Boehmer-Christiansen 2018).

³⁹ See Moore and Laffer (2018) for an (approving) attempt to portray Trump’s alt-right environmentalism as a logical outgrowth of neoliberalism.

modernisation' (EM), the theory of environmental sociology encountered in Chapter 1. That theory attempted to analyse the response by states to the environmental concerns that had risen to prominence in the early 1970s. What it observed was a series of measures—the establishment of dedicated environmental departments and international agencies, introduction of environmental taxation, etc.—which sought not to challenge the political priority of economic growth, but to make it more 'environmentally friendly' (Spaargaren and Mol 1992, Mol and Sonnenfeld 2000). The theory obtained from these observations sees such measures as a manifestation of the kind of 'reflexive modernisation' by which advanced capitalism has the potential to successfully resolve its environmental contradictions. While similar, there is a key difference between ecological modernisation and ecomodernism: while it contains a normative component,⁴⁰ EM is a theory which describes a socio-political phenomenon; ecomodernism is a school of thought which self-consciously endorses that phenomenon, and campaigns for it to be realised. Given my interest is in the articulation of a live discourse within environmental politics it makes sense to use 'ecomodernism' to refer to it; in doing so, however, I am widening its use, beyond those allied to the Breakthrough Institute, to encompass all examples on this theme (sometimes referred to under the headings 'green growth' or 'sustainable capitalism').

Among its critics, the distinctions between ecomodernism and environmental scepticism are often overlooked or a source of puzzlement. A revealing illustration is given by a debate that began with a polemic against limitist-environmentalism by the sustainability consultant Michael Liebreich (2018); a measure of its success as a provocation is gained by noting the rebuttals it drew, not least from Jackson (2018) and Hickel (2018). In another critical response, the environmentalist Rob Dietz noted that, while Liebreich defends the idea of ongoing growth as the key to environmental protection (thereby sounding much like environmental sceptics such as Lomborg), yet he

surprises [...] by departing from most other critics who deny the reality or dismiss the seriousness of climate change. He understands that climate change is 'real, serious, and urgent,' and goes on to say that we need to apply technology, 'both new and yet-to-be-developed, on a heroic scale' to avert climate change. Notice how he's proposing we rely on the same game plan—economic growth plus technology—to solve the

⁴⁰ That is, that capitalism *can* be made sustainable, and that this is the only form in which environmentally sustainability may conceivably be implemented; Foster *et al.* (2010) have been sharply critical of the assertions of this theory.

very problem it caused (but at least he concedes we need to do *something*). [...] And unlike most growthists, he even wants each country to preserve a substantial portion of natural ecosystems. (Dietz 2018.)

Dietz's assessment of Liebreich is noteworthy, first, because of his use of the term 'growthists', which he applies essentially to those I am delimiting as environmental sceptics; my definition of growthists is more expansive precisely in order to recognise that growthism accommodates more than one distinct sub-discourse. The second reason why it is worth paying attention to is because Dietz does, at least in this case, acknowledge this distinction (albeit without putting a name to this sub-discourse): here we have a form of growthism that understands the reality of climate change and the need for collective action to protect the environment.

We could, in fact, identify three tell-tale signals by which to recognise ecomodernism as a moderate form of growthism. The first, as in Liebreich's case, is a taking seriously of environmental limits. Not only climate change, but even the entropic underpinnings of the limits thesis may sometimes be acknowledged: 'Ecomodernism begins with the realization that some degree of pollution is an inescapable consequence of the Second Law of Thermodynamics' (Pinker 2019, p. 123).

A second signal is the way in which it is keen to respect—and utilise—the authority of mainstream science, citing 'the world's most feted scientists and economists' in arguing that 'economic growth is consistent with environmental protection and the mitigation of climate change' (Liebreich 2018). Often its speakers will go out of their way to defend established climate science—not least the IPCC—for the benefit of the general public:

With each new report, the evidence on the strength and source of the effects, and the magnitude of the implications and risks, have become stronger. Some people accuse the IPCC of having institutional and procedural structures which predispose it to alarmism. In fact, the IPCC is structurally conservative and requires very tight consensus among scientists from many backgrounds and nationalities. (Stern 2009.)

Third comes an explicit distancing from environmental scepticism—characterised as 'a movement within the American political right, heavily underwritten by fossil fuel interests, which has prosecuted a fanatical and mendacious campaign to deny that greenhouse gases are warming the planet' (Pinker 2019, p. 138). More subtly, this distancing may be achieved by portraying environmental scepticism as marginal and not

worth the anger which it elicits from most environmentalists (Pielke Jr 2013). Where environmental scepticism is deemed worthy of attack, this comes partly in the form of running down its intellectual credentials: thus Stewart Brand (2010, p. 229) repeats the damning criticisms—‘misuse of data, mis-interpretations, inappropriate precision, errors of fact’—made of Bjørn Lomborg’s *Skeptical Environmentalist* by environmental scientist Peter Gleick. In another line of critique environmental scepticism is presented as being determined by political ideology, hence looked down on as unscientific—even where the ecomodernist might agree with its speakers on individual points. Thus, for example, Mark Lynas, an environmental author who describes himself as ‘a cautious supporter of the ecomodernist effort’, says he agrees completely with the environmental sceptic Matt Ridley on his support for GM crops. However, for environmental sceptics:

[...] I think these things are politically defined, I don’t think they’re really about one’s position on empiricism or science. You know, Matt has a [...] right-wing world view really, and producing genetically modified crops is entirely coherent or consistent with that, whereas the idea of climate change presenting an existential threat to business as usual is something he can’t reconcile with his beliefs. (Lynas 2018.)

While more moderate than environmental scepticism, ecomodernism is still a growthist discourse. This is made clear in its defence of growth, technology, and progress. Lynas is clear that he is ‘a believer in progress. [...] I think that the life of most people has got better [...], I would say since the Enlightenment, [...] and it should be able to continue to get better into the future as long as we continue to push it in that direction’ (Lynas 2018). In poetic mood, Tom Friedman says:

I start from the bedrock principle that we as a global society need more and more growth, because without growth there is no human development and those in poverty will never escape it. But it can’t be growth based on CO₂-emitting dirty fuels from hell. We have to have growth based as much as possible on clean fuels from heaven. So, for starters, we need a system that will stimulate massive amounts of innovation and deployment of abundant, clean, reliable, and cheap electrons. (Friedman 2008, p. 186.)

This brings us to perhaps the most distinguishing feature of this discourse: its distancing not only from environmental sceptics, but also from other environmentalists. Brett Stephens (2018) stresses his distance from ‘people like Bill McKibben and Naomi Klein [who] have made careers saying [...] we need less: less consumption, less stuff, fewer people, and so on’. Stephens complains not only that they are wrong, but that

when people like him point this out they receive ‘tedious criticisms by the environmental left [...] that people like me “don’t care about the environment.”’ But ecomodernists ‘are environmentalists, too. They simply think the road to salvation lies not through making do with less, but rather through innovation and the conditions in which innovation tends to flourish, greater affluence and individual freedom most of all.’

This distancing can often take the form of a polemical critique of limitist strands of environmentalism—Liebreich (2018) going so far as to describe limitism as being based on ‘fake science’ in a deliberately provocative attack. An illustrative example of this phenomenon is given by Matthew Lockwood and Andrew Pendleton, a pair of environmental policy advocates who in the early 2010s briefly modelled themselves as a British version of Nordhaus and Shellenberger. During this period the language they used about limitist-environmentalism was instructive. Pendleton, for example, described those who have been at the forefront of arguing for action to curb greenhouse gas emissions via targets as ‘the climatocracy’, and referred to environmentalists’ warnings of the dangers of global warming as ‘Climate change shroud-waving’ (Pendleton 2010, 2011). The pair subsequently decided that it had been ‘wrong to give in to the temptation to court attention by picking fights on these issues’, but even in conceding this they were keen to distance themselves from limitism: ‘It’s probably a good idea to give up bashing the anti-growthers, as it isn’t that productive [... But] we still think the greenies (by which we mean the anti-growth camp) are wrong’ (Lockwood 2011).

Here we may see the usefulness of the term ‘limitism’; it enables us to understand that ecomodernism belongs within a family of environmentalist discourses, while yet recognising the way in which it lacks an essential quality which has more centrally defined contemporary environmentalism since its beginnings. Pinker (2019, p. 122) is explicit about this, presenting ‘a newer conception of environmentalism which shares the goal of protecting the air and water, species, and ecosystems but is grounded in Enlightenment optimism rather than Romantic declinism.’ Nordhaus and Shellenberger expand:

What was special about environmentalism—its commitment to ecological thinking, its scientific questioning, and its understanding of humans as beings of earth—must be brought forward into the new politics. Its monotheism, its philosophy of limits, and its irrational rationalism must be left behind. (Nordhaus and Shellenberger 2007, pp. 238–9.)

In this discourse nuclear power (seen as key to decarbonising energy systems) and

GM crops (seen as having the potential to aid adaptation to climate change and to feed the world's poor) form a commonly-remarked dividing line with limitist-environmentalism. From within the perspective of ecomodernism, the rejection of these technologies is 'where environmentalism flies in the face of scientific reality' (Lynas 2018). Where science suggests that growth can be made environmentally sustainable, then limitists will tend to disregard it, this view suggests; while in respect of issues like climate change, 'the environmental movement has sided [with] science partly because it's been ideologically convenient or ideologically not challenging to do so' (Lynas 2018).

In terms of political ideology, ecomodernism is essentially centrist/centre-left (Lynas 2015). Nordhaus and Shellenberger (2007, p. 271) describe their environmentalism as 'pro-growth, progressive, and internationalist'. This orientation is reflected on the one hand by the endorsement of capitalist markets (differentiating ecomodernism from limitist-environmentalism):

Thus while capitalism is destructive, and certainly does threaten to destroy the habitability of the planet for us, it is also extremely creative. That creativity, that inventiveness, offers pretty much the only prospect for decarbonising energy that we have, in the form of innovative low carbon technologies. (Lockwood 2010.)

On the other hand, we find an often strong endorsement of state intervention (differentiating this from environmental scepticism's mainly neoliberal economics):

In order to achieve the targets they have set, governments will have to introduce policies that regulate businesses and shape markets. They will have to tax carbon and incentivise innovation. They will need industrial policies and public expenditure. They will find themselves penalising fossil fuel industries and encouraging energy efficiency. [...] And in doing these things they will ensure that capitalism can no longer destroy the climate system, because global society will no longer allow that to happen. (Jacobs 2016.)

For all its fealty to science and rationality, when confronting limitism in theoretical argument, ecomodernism is prone to defending a conception of future technological power which can be almost as absolute and utopian as that of environmental scepticism: 'In the longer term, there is nothing in physics to stop the economy from growing forever. [...] We will use unlimited knowledge [...] to drive endless improvements in human wellbeing and flourishing' (Liebreich 2018). Environmentalists' 'past predictions of imminent disaster didn't come to pass [...] because our Promethean species has shown the will and the wizardry to master the challenge' (Stephens 2018). Adopting limits

policies would mean society stagnates in endless stasis, and deprive us of the means of inventing our way out of future crises:

But if we choose instead to embark on an open-ended journey of creation and exploration whose every step is unsustainable until it is redeemed by the next—if this becomes the prevailing ethic and aspiration of our society—then the ascent of man, the beginning of infinity, will have become, if not secure, then at least sustainable. (Deutsch 2011, p. 441.)

Ultimately this means accepting the responsibility of wielding god-like power: while it is ‘Central to the standard Green creed [...] that playing God is dangerous’,

My thesis is the reverse: playing God [...] is essential if creation is not to be irreparably damaged or even destroyed by humans unwittingly deploying our new-found powers in disastrous ways. At this stage, false humility is more dangerous than hubris. The truth of the Anthropocene is that the Earth is far out of balance, and we must help it regain the stability it needs [...] It cannot do so alone. (Lynas 2012, p. 10.)⁴¹

Promethean socialism

Environmental scepticism and ecomodernism may be the most prominent growthist discourses, but they are not the only ones. More marginally there is a distinctively radical-left discourse, spanning the subdivisions of radical and moderate growthism, that might be called ‘Promethean socialism’.⁴² This owes its conceptual framing again in part to

⁴¹ These sentiments are reflective of what might be described as the original spirit of ecomodernism, going back to Stewart Brand’s statement of purpose in the *Whole Earth Catalog* he founded in 1968: ‘We are as gods and might as well get used to it’ (Brand 1968, p. 3).

⁴² This is not a name generally used within this discourse itself. Leigh Phillips, whose *Austerity Ecology and the Collapse Porn Addicts: A Defence of Growth, Progress, Industry and Stuff* (2015) is a central text in this discourse, would prefer not to be pigeon-holed as representing a specifically environmentalist version of socialism at all; rather, he is simply a socialist who at times writes about environmentalism from a socialist perspective (Phillips 2019). Another prominent writer in this field, Aaron Bastani, describes his own form of socialist environmentalism as ‘Fully Automated Luxury Communism’, or FALC (2019). My rationale for using the term ‘Promethean socialism’ nonetheless is two-fold. First, as Dryzek (2013, p. 22) states, a ‘discourse is not like a tribe’: individuals are not synonymous with the discourses they articulate, and they may fall into different discourses at different times. For my current purposes I am not focusing on the speakers drawn on here as rounded individuals in their own right, but only in the field of texts that a proportion of their writings make up. In this sense, the purpose of naming this discourse is to help convey the analytical meaning with which I am framing it, rather than reflecting a commonly-understood social identity. Second, the use of ‘Prometheanism’ (standing for Dryzek’s portrait of a belief in the human power to dominate nature as a feature of heroic modernity) is an appropriate modifier of ‘socialism’ here, given this discourse is a) solely concerned with environmental debate; and b) differentiates itself from other conceptions of socialism, precisely on its belief in the potential of (socialistically-controlled) technology to overcome environmental limits. This is explicitly recognised by Bastani, where he remarks (2019, p. 189): ‘Our ambitions must be Promethean because our technology is already making us gods’. Further support

Dryzek's category of Promethean environmentalism, but is distinct by virtue of its position that *socialism* is the key to unlocking the potential of technology, enabling us to grow in power and affluence while saving us from environmental disaster. This discourse has historical roots in the form of nineteenth and early twentieth century socialists who were enthusiastic about the prospects of technological development to translate the collective will into reality—witness Trotsky's remarks, for instance, about the 'Unbounded technical possibilities [that] will open out before liberated mankind' once the Soviet state had mastered atomic power (Trotsky 1974 [1924]). In recent years it has enjoyed something of a revival, a legacy both of the rise in the intellectual fortunes of Marxism following the 2008 financial crash, and of the resurgence of limitist discourse (against which it is a reaction) associated with discussion of climate change. In addition it has been fuelled by a wider spirit—something it adapts from the culture of the 'tech bros' of Silicon Valley—of excited speculation as to the potential for advances in digital technology to break down the conventional rules of economics; it sees in this the potential for socialism to realise and be sustained by the overcoming of scarcity. In short, this is a discourse which rejects both capitalism and limitism.

Promethean socialism spans both radical and moderate growthism. Its radicalism is seen clearly in the utopian scale of its belief in the possibilities for growth in technological power: it offers a manifesto for 'a Promethean politics of maximal mastery over society and its environment' (Williams and Srnicek 2013). It is not just that 'we can continue to grow *and* solve our environmental problems at the same time', but that: 'So long as we can keep innovating, [...] you *can* actually have infinite growth on a finite planet' (Phillips 2015, pp. 58–9). The promise of socialist growth is such that:

we will see more of the world than ever before, eat varieties of food we have never heard of, and lead lives equivalent—if we so wish—to those of today's billionaires. Luxury will pervade everything as society based on waged work becomes as much a relic of history as the feudal peasant and medieval knight. (Bastani 2019, p. 189.)⁴³

At the same time there is an element of moderation, relating to this discourse's acceptance of climate science and the reality of environmental limits. Bastani, for

for this label comes from Foster's (2017b) eco-Marxist critique of this discourse, which he dubs 'The New Promethean Socialism'.

⁴³ The influence of Bastani's form of techno-utopianism can be seen in the rhetoric used by the UK Labour Party under the leadership of Jeremy Corbyn: in 2019 Labour's business spokesperson described Labour's proposed 'Green New Deal' as 'ushering in a new era of public luxury' (Bailey 2019).

instance, writes (2019, p. 115) that if we do not ‘mitigate the worst excesses of climate change’ then ‘Not only is the enduring survival of our species at stake, but the very capacity of the Earth to sustain life.’ For Phillips,

we humans certainly don’t want a return to the sort of average global temperatures of the Paleocene-Eocene Thermal Maximum, as that would create conditions inhospitable for us. When we say we do not want global warming, and work to eliminate GHGs, we are actually working to preserve a geologically very rare set of conditions that has existed since the last ice age. [...] If we do not retreat from this disruption, we’ll kill ourselves. (Phillips 2019.)

This point functions as a clear marker which differentiates this discourse from environmental scepticism, some of whose speakers ‘end up denying the reality of climate change, and in a way that the easiest survey of the scientific literature would contradict’ (Phillips 2019).

What distinguishes Promethean socialism in its recognition of environmental limits (i.e. from the way in which they are recognised both by limitist-environmentalism and by ecomodernism) is that these are presented as conditional threats, hanging on the continuation of capitalism. We have the potential to neutralise these threats through technology, the argument runs, but that will only happen if research and deployment is put in the hands of the people, via socialist organisation. Environmentalism here becomes a factor that adds decisively to the case for socialism: capitalism is not only unjust but will, if left in power, kill us. The crucial argument is that capitalism is inefficient, allocating resources chaotically and in an unenlightened manner: ‘the neoliberal species of capitalism unnecessarily bridles innovation, as does capitalism more broadly’ (Phillips 2015, p. 154), imposing an ‘artificial scarcity of market rationing [...] by ensuring that everything, at all costs, is produced for profit’ (Bastani 2019, p. 156). Socialism would solve these problems, unlocking our collective potential to innovate our way out of ecological crises:

A democratically planned economy [...] would make production decisions on the basis of use-value—that is, on their utility to society—rather than just letting capitalists chase capital self-valorisation willy-nilly. [...] Thus the problem with capitalism is not economic growth, but *lack of planning*, and so our target should be the mode of production (capitalism), not growth itself. (Phillips 2015, p. 61.)

If one main way in which Promethean socialism defines itself lies in its socialist vision of growth, the other lies in the distance it takes from limitist-environmentalism. At

one level this is a matter simply of a rejection of the principle of limitism; arguing that ‘the only politics fit to fight climate change’ is the demand for socialist growth, Bastani (2019, p. 189) comments: ‘To the green movement of the twentieth century this is heretical. Yet it is they who, for too long, unwisely echoed the claim that “small is beautiful” and that the only way to save our planet was to retreat from modernity itself.’ Another inflection of this opposition to limitism lies in a populist defence of the material benefits of growth for the common man and woman—*Ferraris For All* as the title of one book (Ben-Ami 2012)⁴⁴ has it—which portrays limitist-environmentalism as being elitist, colonial, and misanthropic. Promethean socialism often takes the form of manifestos for the democratisation of affluence, ‘a left of luxury—including consumer items—instead of a finger-wagging green-left politics of hair-shirted austerity’ (Phillips 2019). Bastani (2019, p. 186) highlights a vision of flourishing individualism at the heart of his programme, in writing of ‘the politics of the self-help guru—be precisely who you want to be—embedded within a broader programme for political change.’ This is presented as the returning to the original spirit of Marxism by Phillips (2015, p. 258), who quotes Marshall Berman (1999, p. 150) to the effect that ‘Marx wants a truly infinite pursuit of wealth for everyone: not wealth in money—“the limited bourgeois form”—but wealth of desires, of experiences, capacities, sensitivities, of transformations and developments.’⁴⁵ Unsurprisingly, this rejection of the principle of limits from a Marxist perspective brings this discourse into conflict with eco-Marxism. Leigh Phillips (2019), while praising the Marxist element of Foster’s (2000) eco-Marxist analysis, and stressing ‘There is so much I agree with, no matter how much he hates me’, takes issue with Foster’s treatment of environmental limits, arguing, for instance, that declining soil fertility is a problem that can ‘be repaired with a bit of good old-fashioned innovation and political reorganisation’ (Phillips 2015, p. 234).

Eco-Marxists tend to identify Promethean socialists as ecomodernists (Angus 2017, Foster 2017b, Proyect 2019). There are certainly overlaps between them, often

⁴⁴ The author of *Ferraris For All*, Daniel Ben-Ami, belongs to a stable of writers associated with the website Spiked. The core ideology of this group is difficult to identify: its origins lie on the far left, but most of its arguments take the form of right-wing libertarianism; its most consistent theme appears to be anti-liberal contrarianism (see Proyect (2005) for an early analysis). As reflected in its funding by the anti-environmental Koch brothers (Monbiot 2018), most of its output on the environment deserves to be classified within the discourse of environmental scepticism; but in its tone of populist utopianism it is possible to detect some overtones of Promethean socialism as well.

⁴⁵ This is Berman’s gloss on Marx’s argument (Marx 1973 [1857-8], p. 488) that wealth represents ‘The full development of human mastery over the forces of nature’.

centring on a shared critique of limitist-environmentalism's opposition to the technologies of nuclear power and GM. But this is to overlook both the socialist political economy, and the more pronounced utopianism, which distinguishes one group from the other. Phillips (2019) states that the Breakthrough Institute and other 'ecomodernists are doing the Lord's work with respect to technological solutions. [...] But while they might have a great analysis on technology, their economic analysis is lacking': too wedded to market-based solutions, they 'balk at the taxes' required for the state to sustain a technological revolution.

On a surface level—given both its left-wing politics and acceptance of climate science—Promethean socialism is generally much more distant from environmental scepticism than ecomodernism. On a deeper level, it is possible to perceive in Promethean socialism some of the same underlying forms of belief as in environmental scepticism (i.e. the utopian scale on which both like to theorise), but with certain decisive twists. There is the same faith in the potential of technology to overcome environmental limits and enable us to grow indefinitely; the difference lies in conceiving the market as the obstacle to innovation, not what facilitates it. Capitalists are depicted as the self-interested antagonists to (rather than the motors of) innovation and growth—since what unbridled technological development promises is such a leap forward in productivity as to create universal abundance, rendering the entire wage and price system obsolete. In a world in which technology supplies us 'with a limitless, virtually free supply of anything' (Bastani 2019, p. 137), why would anyone work for a wage, and how would a capitalist earn any profits?

There is, likewise, the same idolisation of humanity as found in environmental scepticism. The difference here is that the idea of human potential is conjectured in the form of rational, deliberate planning, a picture of the reasoning mind applied collectively. This is what has been responsible for historical progress, and wherein our confidence in the future should reside—'We solved the ozone layer problem. We solved acid rain. Both through regulatory intervention against the market. We can solve climate change and biodiversity loss too' (Phillips 2019). This vision of the motor of progress runs opposite to environmental scepticism's, in whose generally neoliberal world-view human ingenuity is seen as manifesting itself as the unplanned, spontaneous order arising from individuals acting individually, but networked by the market.

Both the ideological differences between Promethean socialism and environmental scepticism, and an underlying confluence of ideas they share, can be observed in Phillips' approving references to the environmental sceptic Julian Simon (Phillips 2015, p. 259).⁴⁶ He clarifies that where he agrees with Simon is 'when he emphasises the boundless capacity for human innovation'; where he disagrees 'is not over innovation, but over his defence of capitalism'. In fact, in arguing that 'Simon if anything is just regurgitating what Friedrich Engels argued over a century ago in his diatribe against Malthus, but from a libertarian instead of Marxist perspective', Phillips (2019) presents socialism as the original source of that confidence in the human ability to progress beyond its material limits which is the essence of growthism.⁴⁷

3.4 Change and continuity in growthist discourses over time

At the end of this delineation of discourses, and before using this schema in my succeeding chapters of analysis, it would be worth recalling a discussion begun in Chapter 2. There, I touched on the rationale behind my selection of individual texts to investigate. In discussing this I referred to Boltanski and Chiapello's position that 'the choice of source texts is not of great significance' in such analysis, providing they are 'defined with reference to a common polity' (2006, p. 153). As promised in Chapter 2, I have sought in this chapter to define the boundaries of the discourses of growthism I am working with, thereby establishing that the individual texts which I am analysing (and mining for illustrative quotations) do indeed belong together. Of course, a feature of this analysis has been my delineation of three distinct discourses of growthism; and a result of this has been to establish ways in which certain texts do *not* belong together. To clarify: as a whole, all the texts I am characterising as representing an overarching discourse of growthism, I contend, do belong to a 'common polity', based on the explicit rejection of

⁴⁶ Phillips (2019) stresses he is 'Not a fan of any of them [environmental sceptics] other than Julian Simon'. Notwithstanding this qualifier, given the centrality of Simon's arguments to the discourse of environmental scepticism (see Chapter 5, in particular), it may be argued that Phillips' sympathy with Simon's core arguments reflects a broader underlying sympathy (abstracting the idea of growth, that is, from political ideology) between both discourses as a whole.

⁴⁷ Phillips (2015, p. 57) quotes Engels' remarks from 'Outlines of a critique of political economy' (1987 [1844]) on 'science—whose progress is as unlimited and at least as rapid as that of population'. The background to this essay, in the circles of Owenite socialists who believed in the power of collectively-organised scientific advance to refute Malthusian assertions of environmental limits—and the Owenites' initial influence on Marx—is discussed in Jones (2020).

the limits thesis they share in common. In other ways, distinct subgroupings or discourses can be identified—environmental scepticism, ecomodernism, and Promethean socialism in my schema.

A significant issue remains to be discussed, however. The texts I have drawn on to perform this discourse analysis (and the further analysis in succeeding chapters) span a period of five decades, the earliest being Maddox (1972) and the latest Worstall (2019). Can they legitimately all be viewed as belonging to a common discourse (whether considering the overall discourse of growthism, or the three sub-discourses outlined here), given this passage of time? To turn to the field of rhetorical analysis, rhetoricians from Bitzer (1968) and Consigny (1974) in the 1960s and 1970s, to Finlayson (2007) and Martin (2015) more recently, have stressed the importance of understanding the historical context to which rhetors—the debaters who shape a discourse—are responding, and are seeking to shape in turn. This is also the insight of the Cambridge school of intellectual history, as developed notably by Skinner (2002). From these perspectives it might seem dubious to generate a map of discourses, as I have in this chapter, out of a selection of texts which spans a period of decades. Do the individual contexts within which each of these texts was produced all sufficiently overlap?

In response to such concerns, we might agree that growthist debate *has* changed over time—but note that one of its features has been the development at different times of the three discourses recognised here. Environmental scepticism is the oldest; this originated in the late 1960s and early 1970s, in response to the initial popular advancement of the limits thesis (Dryzek 2013). Ecomodernism, in its early phase (most commonly discussed via the concept of environmental modernisation) began to become established in the 1980s in the context of the rise of ‘sustainable development’ as a concept, and became prominent as a political discourse in the early 2000s, as reflected in the launch of the Breakthrough Institute in 2003 (Breakthrough Institute 2012). The specific exigence this discourse has developed in response to was primarily the mainstream environmental movement, which some felt to be too negative about growth, capitalism, and the human prospect either for their tastes or to be truly influential with society at large. Promethean socialism is the most recent, and can best be understood within the context of a popular rediscovery of Marxism following the financial crash of 2008, combined with twenty-first century interest in the potential of digitally-enabled tech breakthroughs. Its main exigence was the prevailing limitism among fellow socialists,

which it identified with the misanthropic legacy of Malthusianism, and which it felt ignored the potential of new technology to enable sustainable growth, once in socialised hands.

Within each discourse—and, at a more general level, within the overarching discourse of growthism as a whole—there has been considerable continuity over time. As a recent meta-analysis of environmental discourse observed (concerning both limitist and growthist discourses), while the ‘discursive analysis of environmental policy has matured over the past 25 years’, the ‘contributions to this volume [...] highlight a remarkable continuity of dominant environmental policy discourses over the past decades’ (Leipold *et al.* 2019, p. 465). This should not be a surprise: the essential features of these discourses have remained consistent, because the exigences they first responded to remain present. Chiefly, the political and scientific assertion of environmental limits to technological progress and material prosperity have not gone away—and thus nor has limitism. The central issue in the limits to growth debate remains as it was in its beginnings, at the turn of the 1970s. While the specific terms of this debate may have shifted somewhat over time (with less emphasis on resource depletion and population growth, and more emphasis on climate change and biodiversity), the terms of the underlying arguments (growthism vs. limitism) have remained consistent (Gardner 2004). The *Limits to Growth* report itself quotes (1972, p. 130) from embryonic contributions to growthist discourse, written as ripostes to Paul Ehrlich’s early limitist text, *The Population Bomb* (1968): ‘There are no substantial limits in sight either in raw materials or in energy that alterations in the price structure, product substitution, anticipated gains in technology and pollution control cannot be expected to solve.’ Across the span of decades since then, exactly this same argument can be found in the pages of—to cite just a few of the texts I am including in my analysis—Beckerman (1974), Simon (1981, 1996), Lomborg (2001), and Ridley (2010).

3.5 Conclusion

The purpose of this chapter has been to map out the main discourses of opposition to the limits thesis, and by doing so establish the identifying characteristics of texts to be used in subsequent analysis. I began by discussing the work in this field of John Dryzek; this provided three stimulants to the analysis carried out here. First was a model of

'Interpretive-Structuralist' analysis, focusing on mapping out the defining features of macro-level discourses (rather than inspecting the power dynamics by which certain discourses become hegemonic, or examining individual dialogues in themselves). Second was a theory of environmental discourse, which sees opposition to the limits thesis as an explicit defence of the ideals of modernity. Third was an analytical weakness (the failure to distinguish between three figures who occupy appreciably distinct positions within environmental debate), which lent support to the ambition here of producing an original discourse analysis. This original analysis began with a division of environmental debate into 'growthist' and 'limitist' wings, reflecting opposition to or support for the limits thesis, with a further subdivision of each wing into radical and moderate elements. The growthist side of the spectrum was then filled in with the mapping of three recognisably real-world discourses: 'environmental scepticism', 'ecomodernism', and 'Promethean socialism'.

This analysis has sought to refine the analysis provided by Dryzek, and thereby address the problems he encounters in dealing with voices which, while expressing opposition to some principles of environmentalism, are doing so from quite distinct perspectives. This analysis should allow me in the chapters which follow to focus purely on those texts and arguments which are opposed to the limits thesis as a whole, while observing the distinctions between their other positions. In doing this I hope to have accomplished not merely a technically useful piece of categorisation, but also a substantive piece of interpretive analysis. For the unifying feature which brings together these discourses of growthism, despite their often sharp differences in political orientation, is their defence of a shared set of underpinning ideals: progress, technology, modernity, and an heroic idea of humanity. This, not a denial of climate change (which forms only a subset of these views), is the positive form which a rejection of the limits thesis takes. It is this which marks the boundaries of the terrain which will be mined over the next three chapters.⁴⁸

⁴⁸ To note: while in the chapters that follow I will work with all three of these discourses, as well as discussing growthism as an overarching discourse, given that environmental scepticism is both the oldest and most prominent discourse, and the one most explicit in its opposition to the limits thesis, in practice I will focus more on environmental scepticism than the others. Where I bring in the other two discourses, this will underline the essential opposition to the principle of limits common to growthism as a whole.

4: The commonplaces of environmental scepticism: A rhetorical analysis

In the last chapter I defined growthism as an overarching meta-discourse, and delineated this into a number of individual discourses—of which environmental scepticism was highlighted as the most radical.

In this chapter I begin to work with this schema, subjecting the discourse of environmental scepticism to a first pass of analysis. In this initial analysis, my aim is to pay attention to what this discourse is saying on its own terms. This means giving the arguments deployed an attentive hearing, bracketing out any logical or empirical criticism which might otherwise obstruct my ability to recognise what these interventions may be doing for their articulators and supporters. This means, in particular, paying attention to the ideals and vision of the good life which this discourse is invoking and defending: in isolating the values activated in attacking the limits thesis we may hope to discover something about what the limits thesis is attacking in turn.

To accomplish this task I am turning to rhetorical analysis. The approach outlined here draws support, in particular, from three sources: John Dryzek's reading of the limits to growth debate, Luc Boltanski's work on regimes of moral justification, and Wayne Booth's promotion of 'Listening Rhetoric'. Dryzek's analysis has been rehearsed in the previous chapter; the key point taken up again here is his argument that environmental scepticism (though he does not use this term) is a product of a longer-running discourse of Promethean modernity being 'pressured to articulate its key tenets for the first time' (2013, p. 64). If we understand environmental scepticism in this way, the disquiet registered by its rhetors will certainly encompass personal and class fears of direct economic losses as a result of environmental policies; but also, I would suggest, we may reasonably expect to find here a sign of existential angst, regarding a perceived threat to an epoch-defining belief in human progress.

If Dryzek lends an interpretation specifically of environmental debate, Boltanski (writing in collaboration, in the works drawn on here, with Laurent Thévenot (2006) and Eve Chiapello (1999)), offers a synoptical approach to analysing political debates in

general. His focus is on the necessity for different ideologies (defined as a ‘set of shared beliefs, inscribed in institutions, bound up with actions, and hence anchored in reality’ (1999, p. 3)) to justify themselves in the presence of rival systems, or simply defend themselves against moral condemnation of a specific situation they allow. In particular, he focuses on the need for the ‘dominant ideology’ of capitalism to justify itself against the perception of working life as a matter of being subordinated within ‘an interminable, insatiable process’ of economic production and consumption (1999, p. 7). Crucially, he writes against the practice, characterising much critical social science, of treating justificatory arguments for capitalism simply as a veil for the material interests of those who feel their elevated social position to be threatened. On the contrary, Boltanski argues, the justifications for an ideology point to a certain set of values which need to be shared by both the socially ‘strong’ and ‘weak’, in order for them to understand and functionally accept their roles within this order (1999, pp. 10–11).

A third conceptual influence is the work of those within the field of rhetoric who view rhetorical criticism as providing a practical aid to improving the quality of subsequent debate. Finlayson’s conception of ‘rhetorical political analysis’ is a case in point, this being done ‘not so as to expose or criticise [the elements of political speech...] but in order to contribute to their better understanding and more positive valuation, to ensure not less argumentation but more and better’ (2007, p. 557). Another inspiration is Kenneth Burke, whose interest in rhetoric was, in Herrick’s words, ‘in large measure an interest in finding symbolic means of bringing people back together’, his concept of ‘identification’ being conceived of as ‘the antidote or necessary remedy for our alienation from one another’ (2005, p. 223). Most pertinently, the concept drawn on here is Wayne Booth’s ‘Listening Rhetoric’.⁴⁹ Booth begins from the awareness that all too frequently the opposing sides in a debate never properly listen to each other: ‘Fanatical non-listeners thus waste book after book, article after article, attacking selected extremes, while dogmatically preaching to some version of their own side’ (2004, p. 153). Debate is hereby deformed, turned into performed hostility to the other side (like so many *hakas*, we might say). Booth says that what the world needs is a reduction in rhetorical warfare, ‘ways of probing beneath pointless disputes: methods of discovering shared ground

⁴⁹ See also Andrew Dobson’s *Listening for Democracy* (2014), and Dryzek and Lo’s work on ‘bridging rhetoric’ (Dryzek and Lo 2015).

beneath surface water' (2004, p. 149). This chapter seeks to listen to the arguments of environmental sceptics in just such a Boothian manner.

The rest of this chapter is structured as follows: in 4.1 I discuss the particular aspect of rhetorical criticism being employed in this chapter, namely the analysis of the commonplaces deployed in argument. I outline the way I have applied this method to the texts of environmental scepticism selected for analysis, and display the high-level analytical schema this resulted in, in which commonly-invoked beliefs are organised according to the classical rhetorical appeals of ethos, pathos, and logos. In 4.2 to 4.4 I then support this schema with illustrative examples, discussing one appeal per section. Finally, in 4.5 I conclude by noting the need to continue the analysis of this discourse at a deeper level, to examine what environmental sceptics need to believe about the world in order to make the arguments they do.

4.1 The analysis of rhetorical commonplaces

If the subject matter of this chapter is the argumentation used by environmental sceptics to defend a 'Promethean discourse' of indefinite growth, and the spirit of this chapter is one of seeking to listen attentively to what could make these arguments resonant, the *method* in this analysis is that of rhetorical criticism. Here, I am seeking to use rhetorical criticism to 'read off' this discourse's esteemed values—its vision of the good—from the 'commonplaces' of rhetorical argument it disposes. In this approach, this chapter is following Boltanski, who describes his method of analysis as being 'linked, in a way, with the tradition of studying "topics" or commonplace arguments, a tradition included within the instruction in rhetoric that made up the core of the classical humanities' (2006, p. 67).

What are commonplaces? Finlayson tells us (2007, p. 557), 'They rely on everyday common-sense values of what is just or unjust, honourable or dishonourable, common maxims, generally approved of principles [...] and commonly accepted ways of arguing.' In studying a rhetor's use of commonplaces, then, the critic can learn a great deal about the audience for whom such material is arranged. As Billig notes (1993, p. 126):

The important point, stressed by the textbooks of rhetoric, was that speakers might have to invent the particular arguments to be used on the rhetorical

occasion, but they did not invent the basic materials from which these speeches were constructed. Thus the individual speaker does not invent the values (perhaps of heroism or of obedience to the law) to which an appeal is to be made. Instead the speaker draws upon the value-laden vocabularies which are shared with the audience. [...] In so doing, the speaker appeals to, and speaks within, the *sensus communis*, or the sense which is commonly shared.

If commonplaces depend on already-held beliefs, it seems to follow, then a study of rhetoric should enable us to ‘read off’ the beliefs they connect to. Indeed, as Herrick writes (2005, p. 10), the study of rhetorical discourse can enable us to perceive something about the motives, values, and beliefs of both rhetor and—if receptive—the audience. Hart tells us (1997, p. 61) ‘the study of rhetoric is the study of first premises in use’, which we might understand as signifying the mobilisation, in argument, of people’s basic beliefs about the world. Perelman and Olbrechts-Tyteca (1969, p. 65) stress the centrality of ‘starting points’ in any rhetorical argument, the shared intellectual ground on which rhetor and audience meet (and from which they may journey together). For Booth (2004, p. 8), rhetoric is ‘the art of probing what we believe we *ought* to believe, rather than proving what is true according to abstract methods’—which we could read as describing rhetoric as being all about the advancement of propositions in accordance with values. Boltanski refers to Cicero’s ‘abundant use of the metaphor of “commonplaces” from which an orator can “dig out” his proofs and draw his arguments’, quoting him to the effect that: ‘It is easy to find things that are hidden if the hiding place is pointed out and marked; similarly if we wish to track down some argument we ought to know the places or topics: for that is the name given by Aristotle to the “regions,” as it were, from which arguments are drawn’ (2006, pp. 68–9). In the case in hand, we could understand this to mean that it is not hard to trace the roots of environmentally sceptic arguments: they are in plain sight, visible in the assumptions they display and mobilise as to what is good and right.

In short, in attending to the commonplaces used by environmental sceptics, we may hope to discover an outline of their key ideals. Finlayson provides support for this proposed method in writing that ‘analysis of ideologies [...] suggests that different sets of commonplace are drawn on in liberal or conservative arguments’ (2007, p. 557). In this case, the aim will be to examine the appeals made in these texts inductively, and thereby build up a picture of the overarching beliefs they are defending.

The commonplaces of environmental scepticism

The following analysis engages with a number of texts selected for their prominence within the development of environmental sceptic arguments, or for the representative nature of the particular points they make. In generating the material for this analysis I began by turning to grounded theory.⁵⁰ Following the three-stage approach suggested by Glaser (1978), I began my analysis with a process of open coding, in which I sought not to interpret what I was reading in theoretical terms, but as far as possible simply to take note of what was being said and how. Using NVivo software, for each of the texts I used for my initial analysis I highlighted a large number of brief sections of text (a phrase, sentence, or series of sentences) where the author appeared to be placing particular stress on their arguments, making clear and distinct statements of belief, or using especially value-laden language. I coded each snippet of highlighted text by briefly paraphrasing the point I understood the author to be making. I used these codes to code similar statements as I continued to read, adding new codes as I encountered novel points. During this process I consolidated and refined some of my codes as I detected overlaps between them. Once I had begun to exhaust this stage (the number of novel statements which demanded the creation of a new code was essentially running out—in the language of grounded theory I had saturated my categories (Glaser 1978)), I moved onto my second, selective coding, stage of analysis. In this I reviewed my first-stage codes, consolidated some whose meanings overlapped, and grouped them by similarities in theme, in turn coding these groupings with thematic descriptions. Finally, I reached my third stage of analysis, the theoretical coding stage. In this I reviewed my second-stage codes, seeking not only to group them by thematic similarities but to develop some theoretical explanations as to the key features of this discourse—why, that is, its authors were drawn to certain repeated themes. It was, in fact, in doing this that I spotted a resemblance between my emerging theoretical codes and three of the classical appeals of rhetoric—ethos (establishing a speaker’s character, personal authority, and affective bond with an audience), pathos (the emotional implications of a case), and logos (the rational support for an argument). This then suggested interpreting my second order codings as rhetorical commonplaces, and led me in turn to adopt rhetorical criticism as my

⁵⁰ As developed initially by Glaser and Strauss (1967), grounded theory is a method for the inductive interrogation of texts through a combination of close reading and theoretical analysis. Working through iterative stages of increasing abstraction, the analyst seeks to arrive at an overarching explanation for ‘what is going on’ within the discourse under examination.

overarching theoretical framework for this chapter. Having selected this framework I reinterpreted the material I had originally defined and analysed through grounded theory.⁵¹ To put this another way, grounded theory functioned for me as a first-order analysis, one which enabled me to gain an intimate familiarity with my texts, and provided me with a wealth of processed and indexed subject material on which to train the rhetorical criticism on display in the rest of this chapter.

Table 2 presents the results of my grounded theory analysis in brief, as interpreted according to a framework of rhetorical analysis. In the right hand column it presents a series of propositions: these are my first-stage open codings. These are organised according to a smaller number of more overarching commonplaces (statements of virtue or quality as would be commonly-accepted, I would suggest, within this literature's target audience) that they appear to be linked to: these are my second-stage codings. These commonplaces are then organised according to which of the three classic appeals of rhetoric—ethos, pathos, or logos—they principally belong to: my third-stage, theoretical, codings. In the analysis set out in the rest of this chapter I refer back to my original snippets of source material, each underlying and linked to my analytical codes, to bring this analytical framework to life with concrete illustrations. In addition, having established the analytical framework set out in Table 2, I continued to find examples which fit this schema in my interviews (see Table 4 in the Appendix), as well as my further reading of primary and secondary literatures on or by environmentally sceptic authors: equally, I draw on these further examples for illustrations in the rest of this chapter. The ultimate aim, by focusing on vivid quotations of texts, analysed within a theoretical framework which foregrounds their rhetorical character (hence their concern to assert the validity of their beliefs in a contest with others), is to highlight the positive values these authors are seeking to defend.

⁵¹ Drawing on an existing theoretical framework developed in another field—in this case, rhetorical criticism—is fully in keeping with the accepted practices of grounded theory: 'Developing theoretical sensitivity to a wide range of integrating codes (processes, models, etc.) as used across a wide range of disciplines enhances a researcher's ability to see their emergent fit to a developing theory. Reading widely opens a researcher to serendipitous discovery of new theoretical codes from other disciplines. Latent patterns abound in social research as in nature; what patterns out in biology, for instance, may well conceptually pattern in sociology, in business, or in education. The more open one is to recognizing the larger integrative patterns around us, the more one can exploit their imagery in proposing theories of social behaviour' (Holton 2010, p. 35).

Table 2: Positive appeals made by environmentally sceptic rhetors

Appeal	Commonplace	Proposition
Ethos	Reason and real scientific method tell us the truth about the world.	Environmental sceptics are rational empiricists and true defenders of science (in contrast to politically compromised environmentalist scientists). Environmental scientist are being hubristic if they think humans can predict or control the climate.
	Common sense and our experience of history are the best guides to the future.	Environmental sceptics have history on their side. Environmentalism is just cranky doomsaying.
	Ordinary people understand life and morality better than liberal elites.	Environmental sceptics are the underdogs, environmentalists the establishment. Environmental sceptics are often more in tune with nature than environmentalists.
Pathos	Liberty is the highest good.	Environmentalism is against liberty and has overtones of totalitarianism. Growth is good for people, especially the poorest. Environmentalism is immoral—it means focusing away from other causes which are more pressing and morally deserving.
	There is a moral imperative to increase the material welfare of the highest number of people.	The best and fairest way to tackle environmental problems is to go for maximum growth.
		Environmental regulations are unaffordable and ineffective.
		The interests of people should always be prioritised above those of plants and animals.
Logos	You can't stop economic progress.	It is impractical to stop growth, and foolish to try.
	There are no limits to mankind's ingenuity and problem-solving abilities.	Human ingenuity has almost infinite potential.
		There are, in practice, no natural limits to growth or mankind's future progress.
	The market co-ordinates individuals in a way that enables us to adapt to changing conditions and solve complex problems.	The market system is beneficent, and has the power to solve all our problems.
		The real danger comes from government interference, which could wreck the power of market-driven innovation to solve our problems.
The world is actually getting better and better.	Things will continue to get better for the foreseeable future, so there is nothing to worry about.	
	Optimistic faith that things will continue to get better will help to make it so.	

NOTES

1. Propositions are summarising paraphrases of statements made in an initial selection of environmental sceptic texts: see Table 3 in the Appendix for a list of texts.

4.2 The commonplaces of ethos

Beginning with the appeal to ethos, the first thing we may note is that while environmental sceptics argue continually against the findings of science as used by environmentalists, they are not seeking to argue against science itself. Rather, they seek to appropriate the status of scientific authority for themselves, stressing they are in tune with the genuine spirit of science—unlike much of the mainstream version, which to them has become compromised by environmentalist ideology, dependence on research grants, and the glamour of a fashionable cause.

Commonplace: Reason and real scientific method tell us the truth about the world

One of the major themes in this literature is an appeal to scepticism, invoked as a positive value which protects us against falling into error. Conceived in this manner, as the protector of certainty, scepticism implies some method which can actualise its promise and deliver us answers whose truth we do not need to doubt. For Bjørn Lomborg, author of *The Skeptical Environmentalist*, this method is statistical analysis: 'I always tell my students how statistics is one of science's best ways to check whether our venerable social beliefs stand up to scrutiny or turn out to be myths' (2001, p. xix). By focusing on hard data we will uncover an underlying level of reality, beyond that of mere appearance and popular opinion: we will get down to 'the *fundamentals*' (2001, p. 3). This process must be carried out in the right spirit: that is, with a reverence for truth. Loyalty to the truth, even if it contradicts what we wish to find, is what separates the environmental sceptic from the environmental campaigner: it is 'crucial that we cite figures and trends which are true. This demand may seem glaringly obvious, but the public environment debate has unfortunately been characterized by an unpleasant tendency towards rather rash treatment of the truth' (2001, p. 12). In this way, debate between environmental sceptics and environmentalist campaigners necessarily amounts to a conflict of 'Reality versus myths' (2001, p. 13). Environmentalists' 'rhetorically pleasing' (2001, p. 30) arguments are distorted by the emotion of 'worrying', resulting in 'the Litany', a list of environmental tribulations which add up to the received opinion that environmental exploitation is getting ever worse. This is a dangerous development, because deceptive: 'If we do not make considered, rational decisions but base our resolution on the Litany, that typical feeling that the world is in decline, we will make poor and counterproductive choices' (2001, p. 350).

Within this discourse science is revered—but a sharp contrast drawn with a bogus version that has been warped by ideology and special interests. The environmental sceptic Freeman Dyson is celebrated as a scientist of the right kind: Clive James describes him as one who has ‘served science’ and been one of our ‘true figures of authority’ (James 2017, p. 5). For Dyson himself, ‘Technologies rise and fall, and fashions come and go’, but:

Two facts of life will not change. Science will continue to generate unpredictable new ideas and opportunities. And human beings will continue to respond to new ideas and opportunities with new skills and inventions. We remain tool-making animals, and science will continue to exercise the creativity programmed into our genes. (Dyson 1998.)

This presentation of ‘Science as a craft industry’ (Dyson 1998), a matter of ‘new tools [...] and unexpected discoveries’ (Dyson 1996, p. 805), is echoed by others. Within this discourse, real science is often portrayed as the work of plucky, heroic individuals: ‘Progress is not for the lazy or fainthearted. Whatever may be the outcome of a venture, the personal sacrifices required by the effort itself are staggering. Scientists work long hours in their laboratories. Engineers work equally hard in their workshops and their basements’ (Meyer 1979, pp. 32–33).

Increasingly, it seems, scientists in this authentic mould are an embattled minority. Those ‘few hold-outs who go on fighting to defend the objective nature of truth’ are ‘in short supply’: given they ‘care more about science than about the media’, they ‘tend not to have much influence when they get to speak.’ In the opposing corner we find ‘a bunch of grant-dependent climate scientists’ who ‘get famous [by] serving themselves’ (James 2017, pp. 5, 8–9). At its mildest, the dependence of climate scientists on expensive computer modelling can lead to a culture of ‘Groupthink’, not only because ‘if you started expressing a sceptical view you wouldn’t get grants for the equipment’, but because ‘the untestability of [projections of the future...] means that you tend to get carried along with the crowd, because you can’t do the experiment to prove it’s not true’ (Forster 2018). At its worst, as James finds, the climate science establishment is seen as having parallels with the politically-approved version of science under totalitarian regimes, as represented by the figure of Trofim Lysenko. While such figures ‘might have started out as scientists of a kind, [they] have found their true purpose in life as ideologists’. This perversion of science has so damaged the ‘cause of rational critical enquiry’ that ‘Some of the universities deserve to be closed down’ (James 2017, pp. 10, 8).

Another of the values to which the sceptics make great appeal is that of *reason*. An illustration is given by the predilection of these rhetors to describe disbelief in the seriousness of global warming as being ‘cool-headed’ (GlobalWarming.org 2004, Lomborg 2007, Lawson 2008). The intention behind this pun is to signify simultaneously that one is taking a rational approach to the evidence, and that to do so is necessarily to conclude that fears about the world getting hotter are misplaced. Environmentalism is by contrast presented as ‘hot-headed’ and fantastical, the product of overheated imaginations. Global warming is thus a ‘religion’ which ‘resembles a *Da Vinci Code* of environmentalism. It is a great story, and a phenomenal best-seller. It contains a grain of truth—and a mountain of nonsense.’ In the extent to which this story has been taken literally, we ‘have entered a new age of unreason’. *This* is the real danger we face today: it is from this ‘profoundly disquieting’ state of collective delusion, ‘that we really do need to save the planet’ (Lawson 2008, p. 106).

Combining this accent on reason (and reasonableness) with an esteem for an authentic mode of science, rhetors within this discourse often praise a disposition of humility on the part of (genuine) scientists. While there is a ‘core of robust but uncertain science undertaken by humble and true scientists’, this is all too often ‘overwhelmed by second rate and rampant speculation passed off as gospel’ (Kelly 2016). The humility evinced by true scientists is highlighted in relief by attacks on the ‘sheer hubris’ of environmentalist-scientists for thinking that ‘human policy measures can alter fundamental natural climate patterns’. On the contrary, ‘Humans [...] do not know enough or command the resources to change the impact of natural forces far beyond their control’ (Hart 2015, p. 567). Thus, ‘It is an act of egotism for humans to think we’re a primary source of climate change’ (Gingrich, in Little 2010), and ‘arrogant&naive2say man overpowers nature’ (Palin 2009b). The use of computer models to definitively predict what might happen in the future is unscientific folly; true sceptical scientists are ‘certain of only one thing: the climate will surprise us’ (Stott 2003). Environmental sceptics who are optimistic about technological innovation, by contrast, may ‘dream great dreams but they make modest claims’. Their idea of progress is piecemeal (advancing ‘mostly in baby steps’), but for this very reason pluralistic: ‘We are, it admits, fallible, and largely ignorant. We have not discovered the one best way to live, nor are we likely to. But we can, and have, improved our lot, building on the discoveries, insights, and experiments of the past’ (Postrel 1998, pp. 81–82).

Commonplace: Common sense and our experience of history are the best guides to the future

Empiricism, and the practical experience of ordinary folks, is admired in this literature, while an excessive use of theory by intellectuals and professional experts is deprecated. Environmental sceptics place great weight on the common historical experience of material progress. The strength of this argument-from-experience is well illustrated by Freeman Dyson. In the context of explaining why he remains unconcerned about climate change he states: 'I grew up in the 1930s, and everything was so much worse then. That's, I think, the primary reason why I'm an optimist' (Dyson 2015).

No one has communicated such an argument more eloquently than Ronald Reagan. In one speech as president (Reagan 1983), he begins by recalling the Great Depression—'If ever there was a time to talk about limits to growth, it was then'—before commenting: 'But here we are half a century later, and the American people enjoy a standard of living unknown back in the thirties or even before the thirties'. Meditating on technological progress during this time, he adds:

And think of the things that we take for granted today that didn't even exist before—television, computers, space flights. [...] I've already lived some two decades longer than my life expectancy when I was born. That's a source of annoyance to a number of people. *[Laughter.]* But life on Earth is not worse; it is better than it was when I was your age. And life in the United States is better than ever.

This recollection of progress is clearly based on a material reality that would have resonated with masses of people—certainly in the 1980s, and certainly in the West. Within the discourse of environmental scepticism, however, it has long been transmuted into an article of common sense that such progress must continue forever, that growth is the way of the world. After all, 'when things are improving we know we are on the right track'; and in case of any doubt that such progress could continue in the face of climate change and other environmental dangers, 'we have to constantly keep focus on the fact that humanity has dealt with and overcome problems all through history' (Lomborg 2001, pp. 5, 290). This seemingly hard-headed reference to historical experience is often contrasted with the speculative quality of environmentalists' warnings about what may happen in the future. Environmentalists are ridiculed as 'doomsayers', their warnings

portrayed as being spun out of their imaginations and conditioned by a psychological bent towards pessimism: ‘Professor Ehrlich [...] predicted mass death by extreme cold. Lately he predicts mass death by extreme heat. But he has always predicted mass death by extreme something, and he is always Professor Ehrlich’ (James 2017, p. 1).

In fact, historical examples of millenarian movements that awaited the imminent end of the world, as well as the more general phenomenon of periodic worries over cultural decline, is itself used to give an empirical basis to the argument that environmentalist warnings are necessarily exaggerated: ‘Like the religious millenarians of the past, they have cried wolf so often that we take their claims and timetables with a pinch of salt’ (North 2005, p. 223). Environmentalism is just the latest manifestation of an ancient theme of irrational angst: ‘Throughout the ages, something deep in man’s psyche has made him receptive to apocalyptic warnings: “the end of the world is nigh” ’ (Lawson 2008, p. 102). But ‘all the apocalyptic prophecies of this nature will turn out to be falsified in the same way that all such prophecies have been falsified in the past’ (Beckerman and Pasek 2001, pp. 194–5).

This expectation that prophecies of doom will necessarily be false can further be used to support the argument that predictions of an environmentally benevolent future will necessarily be true. Lomborg begins his *Skeptical Environmentalist* with a quotation from Julian Simon, which predicts: ‘The material conditions of life will continue to get better for most people, in most countries, most of the time, indefinitely. [...] I also speculate, however, that many people will continue to *think and say* that the conditions of life are getting worse’ (2001, p. vii). In the way that these predictions are paired, the very existence of environmentalist concerns is framed as though confirming the proposition they are baseless.

Commonplace: Ordinary people understand life and morality better than liberal elites

Another dimension to this celebration of common sense is an identification of environmental scepticism with the spirit of democracy. There is a strong aversion in these arguments to the idea of accepting things on authority, or worse, being told what to believe. Instead, there is a strong attachment to the idea that one can determine the truth for oneself through one’s private reasoning and observation: ‘The key idea is that we

ought not to let the environmental organizations, business lobbyists or the media be alone in presenting truths and priorities. Rather, we should strive for a careful democratic check on the environmental debate, by knowing the real state of the world' (Lomborg 2001, p. xx). In this spirit, the Director of the Global Warming Policy Foundation (GWPF), sees his mission as opening up the work of climate scientists to democratic scrutiny: 'I certainly don't believe in science by authority, that's for sure. I believe in science by solid arguments and factual arguments, and there are [...] extremely brilliant science bloggers who have discovered flaws in papers [...] and why shouldn't they be heard?' (Peiser 2017). For another member of the GWPF, the one-sided nature of public information on climate science means that 'we always do have to take a slightly different view [to mainstream science] to an extent', but that this is 'a good thing to do in itself' because it is only by redressing the balance and testing the mainstream view that one can 'engender a healthy critical debate' (Forster 2018).

Another common theme, extending from this identification with democracy, is the populist argument that environmentalism is a defining property of a cosmopolitan elite. In this case it is not the material inequality such an elite embodies that is objected to, so much as its double-standards and intolerance of dissent. At best, environmentalism is a performance for 'people [who] feel better when they drive a hybrid car or ride a bicycle to work, and like to parade their virtue in this way' (Lawson 2008, p. 103). At worst, this solidifies into the ethos of a class which, secure in the opinion of its own virtue, is blind to its hypocrisy—'Prince Charles [...] lecturing me about global warming while borrowing large private yachts for his holidays', while 'Half the rock stars in the world, resting from their world-wide tours, tell us how much they worry about nature' (North 2005, pp. 281, 229). In a specifically American context, environmentalism is identified as the minority interest of an effete 'urban biocoastal elite', having been rejected by the 'people in the heartland, the people who get their hands dirty, people who dig stuff up, grow stuff and make stuff for a living, people who have a close relationship to tangible reality, to stuff' (Ebell, in Freese 2020, pp. 246–7). For Clive James (2017, p. 3) Julia Gillard is a walking joke for buying a house on the beach, having been a 'prophet of the rising ocean'; but his real ire is directed at 'the consensus of silence from the wits and thespians' who refuse to satirise such a ready target, due to climate change's being an article of faith among their kind. In this context, environmental sceptics celebrate themselves as being, not just correct, but courageous in striking a blow for those who feel oppressed by the cultural

disapproval of this liberal elite. The obvious delight one writer takes in referring to his optimistic views about the environment as ‘great sins against conventional wisdom’ (Ridley 2010, p. 353) conveys the clear message that those who enforce such convention are far from wise, and their moralised condemnation of dissent illegitimate. In a stronger formulation, environmentalism is pictured as an active attempt by liberal elites to deceive society at large, as when ‘manmade global warming’ is described as ‘the greatest hoax ever perpetrated on the American people’ on the floor of the US Senate (Inhofe 2003).

A related proposition on this populist theme is that, far from being uncaring towards nature, environmental sceptics—and many ordinary people, especially those who live in the countryside—are often more in tune with nature than environmentalists. Environmentalists are often depicted as city-dwellers, whose concerns for nature are literally distant from reality, a matter of abstract ideology rather than intimate knowledge. As a result, their ideas can make matters worse, such as when, it is argued, their desire to conserve forests in a pristine state actually leaves them more combustible—‘Extreme environmentalists [...] talk about habitat and yet they are willing to burn it up’ (Canon 2018); ‘Greens cause fires. [...] They cause fires in wild landscapes’ (Pile 2020).

By contrast, sceptics are keen to stress their own credentials as intimates of nature, ‘stewarding and nurturing the bountiful earth as it stewards and nurtures them’ (Arnold 1996, p. 23). One set of claims here concerns the efficient use of natural resources, with some sceptics happy to endorse environmental technologies on the practical (and even moral) grounds of an aversion to waste (‘part of the reason we have a heat pump is because it’s a very efficient use of energy, you produce three times the amount of heat for your unit of electricity’ (Forster 2018)). In this vein they may indeed talk of themselves as being ‘very committed to the good of the planet’ (Forster 2018). Another claim is to an aesthetic appreciation of the natural world—‘I’ll match my birdwatching time with just about any environmentalist, and I’ll bet that I’ve seen more birds this spring than most of your environmental friends’ (Simon 1996, p. xxxiv). Environmental sceptics may also present their relationship with nature in a way that stresses markers of difference with liberal or progressive environmentalists—e.g. hunting {‘with some communities located hundreds of miles from big grocery stores, Alaskans have for generations lived on local, organic protein sources. [...] It always puzzled me how some of the people who think killing and eating animals in the wild is somehow cruel have no problem buying dead animals at the grocery store, wrapped in cellophane instead of fur’}, and religion (‘you’d

think we'd have tired of seeing yet another caribou or dall sheep along Alaska's roadways. But then, as now, our wildlife inspired excitement, and even today we'll still pull over to look, and take a picture. My parents instilled in me that appreciation; we were not to take for granted the wonder of God's creation') (Palin 2009a).⁵²

In some cases sceptics have been on a journey from a previous life as an environmental campaigner, and like to highlight that they retain an environmental consciousness, in this way emphasising that the focus of their opposition is to the excesses of the environmentalist movement: 'I'm a perfectly good green; I love nature and all of that, of course' (North 2018, p. 9); 'No whale or dolphin should be killed or captured anywhere, ever' (Moore 2013, loc. 263). Sometimes this framing is obviously utilised to counter the negative image portrayed of them by environmentalists. Thus the author of a critical article on the climate change school strikes inspired by Greta Thunberg, frames his motivation as follows: 'So in an effort to help out, being the tree hugger I still am (I love clean air, water, etc) I would like to inform the youth of the planet about what they are striking about [...]' (Bastardi 2019).

In most cases, the relationship with nature espoused by sceptics is, while caring, one in which human interests are paramount—'I don't like to kill even spiders and cockroaches [...] But if it's them versus me, I have no compunction about killing them even if it is with regret' (Simon 1996, p. xxxiv). Cruelty towards animals or thoughtless despoliation of nature are *bad things*: 'Of course we must be careful never to wipe out lesser species wantonly, or without good cause. But allowing a species of plant, animal, bird, or fish to survive at a cost to our own welfare is more than silly. It is unnatural.' As we have, through natural selection, evolved to become 'the most important species', so must we 'always put the welfare of people before the welfare of plants, of animals, of birds, and of fish'. It is merely what self-preservation compels us to do: 'a species that can not protect itself does not survive' (Meyer 1979, p. 166). For 'Nature is our ward, not our master. It is to be respected and even cultivated. But it is man's world. And when man

⁵² As Hatzisavvidou (2019, p. 7) notes, this identification of sceptics as intimates of nature may be creatively exploited in a further sense, as when in 2010 Sarah Palin identified (with) a section of women within the right-wing Tea Party, whom she christened 'Mama Grizzlies'—thereby constituting a 'political identity of mums "who are rising up" in the way that "the mama grizzly bears rise up on their hind legs when somebody's coming to attack their cubs [...]".'

has to choose between his well-being and that of nature, nature will have to accommodate' (Krauthammer 1991).

The human-centredness of the relationship with nature depicted in this discourse is such that it tends to be unsentimental about areas perceived as wilderness, even to the extent of arguing against saving (much of) the Amazon rainforest—after all, 'very few people have found much of a use for it as it stands' (North 1995, p. 234). In such cases, it is not that environmental sceptics are, as it were, *against* the rainforest; it is just that they don't see why it should not be exploited. What they are *for* is nature as part of social life:

It turns out most people like other sorts of forest much better [than the Amazon]. Parents like open forest where you can see where the kids are playing. You also want signs that tell you what you're seeing [...] It's a very different kind of forest that most people actually want. You need a parking lot close by, that kind of stuff. (Lomborg, in Whittell 2005.)

4.3 The commonplaces of pathos

In their appeal to 'ethos', then, environmental sceptics present themselves as the defenders of a democratic rationality and of a practical relationship with nature, against the attacks coming from a delusional group of elitist hypocrites. It is in their use of 'pathos' that they underline their case that this matters, that there is something vitally important at stake in this debate. Here we may note a twin attachment to individualism and utilitarianism. This is a highly anthropocentric view of existence: the human individual is the most important thing in the world. The highest good therefore inheres in maximising individual freedom and material wellbeing. This gives opposing environmentalism a moral character.

Commonplace: Liberty is the highest good

A common theme in this literature is to criticise environmentalism as intrinsically authoritarian, and to liken it to totalitarian movements of the twentieth century. Environmentalism is repeatedly presented as a decoy: the 'alleged horrors of global warming' are merely a 'licence to intrude, to interfere and to regulate', pursued by 'those who wish to take power to order us how to run our lives' (Lawson 2008, p. 101). Environmentalism may 'All sound good in the abstract. But scratch the surface and you will as likely as not discover anti-capitalism [...] and intrusions upon the sovereignty and

democracy of nations' (Thatcher, in Charter 2003). For some, 'the climate change fad itself is an offshoot of this lingering revolutionary animus against liberal democracy' (James 2017, p. 10).

Behind environmentalism, these writers argue, we can see the spectres of communism and fascism. 'With the collapse of Marxism, [...] those who dislike capitalism [...] have been obliged to find a new creed. [...] For many of them, green is the new red' (Lawson 2008, p. 101). Many environmentalists 'used to be communists or socialists, but history has been unkind to them, and now all they can do is complain about pollution' (Friedman 1995, pp. 11-12): 'The Red Star is burned out, but the Green Star is rising' (Baird 1991, p. 204). Such allusions are not confined to Soviet communism but extended to fascism—Greenpeace being likened to Goebbels (Lindzen, in Rowell 1996, p. 244), greens to 'Hitler-loving imperialists' (Durkin, in Pallister *et al.* 2000), and the US Environmental Protection Agency to a 'gestapo bureaucracy' (Inhofe, in Mooney 2005, pp. 78-9).

The pathos of this argument is underlined in those cases which direct our attention to the tyrannical nature of the regimes alluded to. 'Like Marxism,' environmentalism may appear virtuous, but it is 'the green road to serfdom' (Postrel 1990). We should therefore be 'suspicious of over-idealistic positions' such as many environmentalists take, remembering that 'the history of the twentieth century [...], in its worst communist and fascist forms, it is a sort of history of idealism causing havoc' (Forster 2018). Beckerman and Pasek, in this context, pointedly quote Isaiah Berlin as recalling the literal 'sacrifice' such regimes made 'of living human beings on the altars of abstractions - nation, Church, party, class, progress, the forces of history [...]' (2001, pp. 111-12).

Another bridge to this historical tradition of anti-totalitarian writings is visible in the references to environmentalism's religious character. Nigel Lawson, for example, writes:

I suspect that it is no accident that it is in Europe that eco-fundamentalism in general and global warming absolutism in particular, has found its most fertile soil; for it is Europe that has become the most secular society in the world, where the traditional religions have the weakest hold. Yet people still feel the need for the comfort and higher values that religion can provide, and it is the quasi-religion of

green alarmism [...] which has filled the vacuum, with reasoned questioning of its mantras regarded as little short of sacrilege (2008, p. 102).

Lawson can be seen here working with the idea of totalitarian movements functioning as a form of ‘political religion’, as advanced by the likes of Raymond Aron in the 1930s.⁵³

The operative quality here is ‘fundamentalism’: this is a view of religion in which, disconnected from its traditional sphere, it re-emerges as a particularly irrational force, mobilising its followers around impossible goals of worldly transformation. While people who reject traditional religion think they are being rational, this leaves a ‘faith-hole’ which may be filled by ‘junk science’ (North 2005, p. 256). This view of radical political movements understands that ‘religious passions, you know, once the genie’s out of the bottle, they don’t go back in the bottle. They get displaced into other activities’ (Forster 2018). In the case of environmentalism, this can take the form of a ‘guilt-driven, quasi-religious Western fervour to save the planet’ (Forster 2014, p. iv).

Commonplace: There is a moral imperative to increase the material welfare of the highest number of people

One element of the environmental sceptics’ presentation of pathos is thus a warning against state terror, and a complementary defence of an ideal of limited government which protects individual liberty. The other element makes the case that environmentalism is harmful to the material wellbeing of society, most of all to those most in need.

This is often presented as a simple matter of morality: ‘It is precisely because there is still far more suffering and scarcity in the world than I or anybody else with a heart would wish that [... we have] reason for pressing on urgently with economic progress, innovation and change, the only known way of bringing the benefits of a rising living standard to many more people’ (Ridley 2010, p. 353). The logic of this argument is equally simple: ‘In the developing world, the major cause of ill health and the deaths it brings, is poverty. Faster economic growth means less poverty’. By calling for the imposition of limits to growth, ‘the would-be saviours of the planet are, in practice, the

⁵³ See Chapter 7 for a discussion of the ‘secularisation thesis’ debate, which has incorporated discussion of the concept of ‘political religion’ as an interpretation of twentieth century totalitarian movements. See also Gentile (2006) for a recent study specifically of ‘political religion’ as a concept.

enemies of poverty reduction’ (Lawson 2008, pp. 33, 105–6). In this context, ‘attacks on economic growth and technological development are unforgivable’ (Ben-Ami 2012, p. xi).

In addition to an overall opposition to economic growth, specific policies pushed by environmentalists are also adjudged to bear down on poorer communities in particular. Examples cited include subsidies for renewable energy generation which are paid for out of increases to household fuel bills, meaning, for instance, that ‘the subsidies for Scottish landowners with lots of windfarms are being paid by the poor of Glasgow’ (Forster 2018). Another example given is that of the Grenfell Tower disaster, in which a fire in a London social housing high-rise block in June 2017 led to the deaths of 72 people:

Because what happened with Grenfell Tower was that you put this insulating cladding on to reduce carbon dioxide emissions. That’s the reason for it, it’s environmental to make these things better insulated. And the cheapest, most effective insulation happened to be inflammable, and nobody noticed. And so they give preference to what is in effect a climate policy, a policy on carbon dioxide, [...] over safety (Forster 2018).

An extension of these criticisms of the negative impacts of environmental policies on people’s physical safety and material wellbeing is to argue that they also, by retarding the growth of freedom and prosperity, undermine society’s *moral* progress:

Most ominously of all, the war against progress will cripple our present drive to end racial discrimination in the United States. For economic growth has always been the single most powerful and effective enemy of racism. The more opportunities we have to live the way we want, the less bothered we are by other people. More precisely, the wealthier we become the more tolerant we become of others. (Meyer 1979, p. 125.)⁵⁴

In similar terms, the literal idea of human growth—as in the physical growth of civilisation through colonisation of space—has been suggested as a remedy for the evils of nationalism

⁵⁴ In recent years this argument has been prominently articulated by Benjamin Friedman (2005). While not to be classed as an example of environmental scepticism (he is much more of an ecomodernist, in that he accepts the authority of environmental scientists and advocates public policy responses to address environmental problems), Friedman provides a book-length defence of growth not (only) for its material benefits, but for its amelioration of social conflicts. His starting point is that ‘the rising intolerance and incivility and the eroding generosity and openness that have marked important aspects of American society in the recent past have been, in significant part, a consequence of the stagnation of American middle-class living standards during much of the last quarter of the twentieth century’ (Friedman 2005, p. 9). Such arguments can be seen as the domestic translations of earlier arguments (e.g. Vieira 2018), going back to Kant (1996 [1795]), on the benefits of international trade, over and above any economic returns, in promoting peace between nations.

and racism, innate human ills which fester in conditions of inward-looking stasis (Dyson 1969).

The corollary of any such criticisms of the negative social impacts of environmental policy is a defence of the positive social impacts of economic policy, even where it is conceded that this in turn has negative impacts on the environment. In Freeman Dyson's hands, this defence is founded on a positive ethical principle he calls 'humanism' (Dyson 2007). Dyson is at pains to stress that to prioritise human interests is not to be against the environment. As he puts it: 'The humanist ethic begins with the belief that humans are an essential part of nature. [...] For humanists, the highest value is harmonious coexistence between humans and nature.' His argument is that environmentalism is in error to suppose there is a fundamental conflict of interests between man and nature, for the reason that human evolution is itself a facet of nature; to argue against mankind's pre-eminence is thus to argue against nature itself. As he frames it, we need, for the sake of nature, to accept the responsibility which it has given us: 'Through human minds the biosphere has acquired the capacity to steer its own evolution, and now we are in charge. Humans have the right and the duty to reconstruct nature so that humans and biosphere can both survive and prosper.' Given we are the highest form of life, so the 'greatest evils' of human life are the greatest evils of nature: and these are 'poverty, underdevelopment, unemployment, disease and hunger, all the conditions that deprive people of opportunities and limit their freedoms'. Thus Dyson's ultimate justification for anthropogenic climate change: 'The humanist ethic accepts an increase of carbon dioxide in the atmosphere as a small price to pay, if world-wide industrial development can alleviate the miseries of the poorer half of humanity.'

This stress on the special value of the human is something which the rhetors of this discourse perceive as being under attack from environmentalists: 'Man is routinely figured as a cancer on his planet. He is often talked-of as being a brown stain on the pure green and blue we inherited from the pre-human world. Man is a blot on the landscape' (North 2005, p. 231). 'To the environmentalists and their allies, [...] people apparently are less important than caribous, grizzly bears, walruses, and sea lions' (Meyer 1979, p. 39). One author labels environmentalists 'the Misanthropists', declaring: 'If humans are the problem—as environmentalism argues—then human solutions can only, at best, be viewed with suspicion, and at worst, with sneering contempt' (Williams 2008, p. 131). This is not simply disagreeable but has negative practical implications for our world:

‘Wallowing in the contemporary acceptance of humanity’s subservient—and inherently harmful—relationship with nature, has undoubtedly done psychological damage to the belief in our ability to act positively to change the world for the better’ (Williams 2008, p. 133).

Bjørn Lomborg presents a range of arguments which combine the themes discussed above—the case for prioritising humans with the greatest material needs, presenting such prioritisation in moral terms, and embedding this within a hierarchy in which human interests are necessarily paramount. He starts with the premise that ‘The only scarce good is money with which to solve problems’. This means that, ‘We are forced constantly to prioritize our resources, and there will always be good projects we have to reject’ (2001, p. 9). More money spent on the environment necessarily means less spent on ‘health, education, infrastructure and defense’ (2001, p. 31). This is precisely what makes environmentalism harmful: ‘The constant repetition of the Litany and the often heard environmental exaggerations has serious consequences. It makes us scared and it makes us more likely to spend our resources and attention solving phantom problems while ignoring real and pressing (possibly non-environmental) issues’ (2001, p. 5).

From this point, we could identify two related arguments. First, in seeking to prioritise among various public spending options, one should choose where to prioritise our resources by ‘Counting [human] lives lost from different problems.’ While this ‘does not mean that plants and animals do not also have rights’, it does mean ‘that the needs and desires of humankind represent the crux of our assessment of the state of the world’ (2001, p. xi). Second, economic growth is understood as smoothly translating into an increase in human power, which will necessarily protect human lives, even when faced by increasing environmental risks:

If we contemplate a more environmentally oriented future, in which sea-level rises would be lower, our instincts would be to expect fewer people flooded. However, such a future would also be a less rich one—the IPCC expects the average person in the standard future to make \$72,700 in the 2080s, whereas a person in a more environmentally oriented (but less growth-oriented) world would make only \$50,600. Despite one-third less sea-level rise, the environmental world will likely see *more* people flooded, simply because it will be poorer and therefore less able to defend itself against rising waters (2007, p. 69).

On a similar theme, Lomborg writes: ‘It is often assumed that global warming will put human health under greater pressure. [... But] a much richer world will be far more able to afford most people access to air-conditioning’ (2001, p. 291). Since many proposed environmental policies would slow down economic growth and thereby make people relatively poorer, he is able to conclude that environmentalism is in general associated with greater human suffering. Thus, for example, ‘scrapping pesticides would actually result in more cases of cancer because fruits and vegetables help to prevent cancer, and without pesticides fruits and vegetables would get more expensive, so that people would eat less of them’ (2001, p. 10). More pointedly, given the number of people in the world who currently die from cold, he attacks carbon mitigation policies precisely because they would be *effective* in slowing down global warming: ‘as warming will indeed prevent even *more* cold deaths, we have to ask why we are thinking about an expensive policy that will actually leave *more* people dead’ (2007, p. 114). The overall conclusion to be drawn from this line of argument is that ‘only when we get sufficiently rich can we afford the relative luxury of caring about the environment’ (2001, p. 33).

The private pursuit of economic growth, in summary, is presented in this literature as the cornerstone of both liberty and welfare, and moreover the source of such material power as necessary to overawe any of the problems suggested by environmentalists anyway: ‘The best way to ensure that Britain can cope with climate change is to bet on growth, and build a country rich and free enough to survive whatever the climate throws at it’ (Sinclair 2011).’

4.4 The commonplaces of logos

Regarding the intellectual structure of the sceptics’ arguments against the proposals of environmentalism, what stands out is an outlook which combines determinism, optimism, and a counterpoising sense of jeopardy.

Commonplace: You can’t stop economic progress

These arguments begin from a fatalistic assertion that growth—and consumption of fossil fuels—is simply the way of the world: ‘Any country with fossil-fuel reserves will exploit

them'. Any attempts by richer countries to cut back on carbon emissions will just lead to lower oil prices, 'enabling higher consumption by poorer countries' (Forster 2011). To think that fossil fuels aren't 'just going to be used' is to adopt 'a sort of King Canute stance' (Forster 2018). Any individual nation, such as the UK, that wishes to take the lead on cutting carbon emissions will be engaging merely in 'costly masochism': the 'futility of the moral leadership conceit' will be seen in the 'nugatory reduction in overall global emissions that this would lead to.' Even implementing such a policy right across the EU would be pointless: 'energy-intensive industries and processes would progressively decline in Europe, and expand in countries like China' (Lawson 2008, pp. 62-3).

This fatalism, it must be stressed, is often presented in optimistic terms (ensuring that resignation to fate is anything but tragic). If we surrender to the irresistible dynamic of the world, this presentation suggests, we will find it shall provide for us. Frequently, nature is depicted as robust, suggesting we can be relaxed about our uses of it:

Today I can walk through forests where my grandfather clearcut logged 60 and 70 years ago, and if it weren't for the presence of rotting, moss-covered stumps, you would never know the forests had once been cleared. The new forest is so lush and full of shrubs and ferns that all evidence of disturbance has disappeared. Bears, wolves, cougars, ravens, owls, eagles, and all the other forest-dwellers live there. The trees are straight and tall. Although they have not yet reached the great size of their predecessors, they form a dense and growing cover on land once cleared bare. The marvel of this renewal is that it took place entirely on its own, without the slightest help from human hands. There had been no thought given to reforestation or any other aspect of restoration. Nature has regenerated almost in spite of human disturbance and is rapidly returning to its original condition. (Moore 2013, loc. 846)

This positive vision of fate, with its apparent faith in an underlying providential power of nature, may also be observed in references to the market as a quasi-natural force; this comes to the fore in considerations of the marketisation of nature, whereby the same powers of dynamic life are depicted as enmeshing harmoniously, to the benefit of all. This may be an implicit feature of writings on free-market environmentalism, but may sometimes be outlined in an explicit theory:

One of the problems faced by the leftish 'limits' view is that sophisticated ecologists understand that opportunism and dynamism are part of the vitality—the strength—of the natural world. They know that the survival of life's communities is richly bound up with the

individualism of its members, and they understand that natural systems often respond well to the chaotic events which befall them. Volcanoes, forest fires, flood, climate change: those species are with us which have survived these, and can again. Nature's myriad opportunisms are its strength. Indeed, and it must be galling to the left-minded green: nature shows every sign of being like the free market, in which dynamism and individualism turn out to be the guarantor of survival. (North 2005, p. 233.)

Commonplaces: There are no limits to mankind's ingenuity and problem-solving abilities; The market co-ordinates individuals in a way that enables us to adapt to changing conditions and solve complex problems

The fatalistic presentation of economic reality is typically presented in a positive light: our fate is a benevolent one, if only we realise it. This position largely advanced through two complementary commonplaces: that there are no limits to human ingenuity, and that the market system enables us, by harnessing this ingenuity, to adapt to changing circumstances and continually improve our lot. Ingenuity is regarded as a protean, immaterial, and hence inexhaustible source of material power—humans have ‘limitless imaginations [that] can break through natural limits’ (Arnold 1996, p. 24), meaning that, ‘It’s reasonable to expect the supply of energy to continue becoming more available and less scarce, forever’ (Simon 1996, p. 181). Market forces put this ingenuity to work—‘scarcity drives up price; that encourages the development of alternatives and of efficiencies’, turning ‘the human race [into] a collective problem-solving machine’ (Ridley 2010, p. 281). This market feedback means ‘we will never run out of any resource, or even suffer seriously from any sudden reduction in its supply’ (Beckerman and Pasek 2001, p. 101).

Environmentalist concerns are thus real, but nothing to worry about, merely grist to our economic mill. All we need is faith in ourselves:

At work is a general process [...]: humans on average build a bit more than they destroy, and create a bit more than they use up. This process is, as the physicists say, an ‘invariancy’ applying to all metals, all fuels, all foods, and all other measures of human welfare, in almost all countries at almost all times; it can be thought of as a theory of economic history. The crucial evidence for the existence of this process is the fact that each generation leaves a bit more true wealth – the resources to create material and nonmaterial goods – than the generation began with (Simon 1996, p. 582).

Understanding ourselves in this way, we can see that humans are *good* for the environment: ‘We are actually leaving the world a better place than we got it’ (Lomborg 2001, p. 351). We therefore have every cause to be ‘rational optimists’ about the future:

And the good news is that there is no inevitable end to this process. [... T]here is no reason we cannot solve the problems that beset us, of economic crashes, population explosions, climate change and terrorism, of poverty, AIDS, depression and obesity. It will not be easy, but it is perfectly possible, indeed probable, that in the year 2110, a century after this book is published, humanity will be much, much better off than it is today, and so will the ecology of the planet it inhabits. This book dares the human race to embrace change, to be rationally optimistic and thereby to strive for the betterment of humankind and the world it inhabits. (Ridley 2010, p. 7.)

At the same time, even while presenting such an optimistic case, these writers tend to sound a note of alarm. We do face challenges and risks, and things may go wrong—if we falter, losing faith in ourselves and the possibilities of human ingenuity harnessed by the market. We will be tempted, in other words, by siren voices who test our faith—who argue that we should fix our problems before they get any worse, striving to limit the damage through state intervention.

This would be a great mistake, we are told, because it would stop the very thing—the drive for material progress that results in economic growth—that can save us: ‘The apparently obvious way to deal with resource problems—have the government control the amounts and prices of what consumers consume and suppliers supply—is inevitably counterproductive in the long run because the controls and price fixing prevent us from making the cost-efficient adjustments that eventually would more than alleviate the problem’ (Simon 1996, p. 584). That is to say: ‘The real danger comes from slowing down change’ (Ridley 2010, p. 281).

Virginia Postrel’s *The Future and Its Enemies* (1998) is a book-length meditation on this particular theme. She contrasts ‘dynamists’—those who believe in ‘constant creation, discovery, and competition’—with ‘stasists’—those who yearn for ‘a regulated, engineered world’ (p. xix). ‘Dynamists,’ she says, ‘believe in the future, in the capacity of human beings gradually and voluntarily, by trial and error, to improve their lives’ (p. 41). They view the future as an ‘infinite series’, ‘an open-ended progression of invention, learning, adaptation, and change’ (p. 59). They are thus: ‘The party of life, the party that fears no “abyss” in the unfolding future’ (p. 215). Stasists, meanwhile, are ‘scared of the

future' (p. xiv), and seek regulations to shape it according to a preferred vision. But in their pessimism they underestimate our ability, spontaneously and through the market, to overcome environmental challenges. Such stasists are 'numerous', and thus pose a real threat (p. 26); as 'enemies of the future' they must be resisted or, it seems, a different (worse) future will be realised. What we need to understand, we are told, is that this isn't just another intellectual dispute: 'We are in the midst of a *war*' (emphasis added)—'the war against progress'. The stakes could not be higher: 'the price of losing it will be more destruction and human misery, for more people in more countries, than any previous war has ever brought' (Meyer 1979, p. 3).

Commonplace: The world is actually getting better and better

How do environmental sceptics foresee a way out of this danger? They often present this as a test of faith: having the right attitude is key. If we are to make progress we must reject the 'counsels of despair' from environmentalism, which represent 'a kind of collapse of faith [... in t]he West' (Reagan 1988). This will come about through rejecting the politics of 'pessimism, fear, and limits compared to ours of hope, confidence, and growth' (Reagan 1984). We must be bold; fundamentally we must reject something in ourselves—our doubts about the future, our attachments to the past. The 'developing economy of the future' will be one of great 'opportunities, if only we have the courage to embrace them, to jettison the prejudices and small-mindedness of the past' (Reagan 1988). In order 'to take advantage of these staggering advances' that are waiting for us, 'we must [...] meet the challenges of change' (Reagan 1983). If we heed this call, then we are almost bound to prosper: 'many solutions [to environmental problems] will occur almost of their own accord [...] if we take the optimistic view that solutions are not only feasible but probable' (Allaby 1995, p. 181).

Having built up a sense of jeopardy, then, environmental sceptics tend to dismiss it. While Postrel says that stasists will try to convince everyone that we are 'running out of resources', she is clear that this is 'a prophecy inevitably contradicted by dynamic developments' (p. 51). To Beckerman and Pasek economic growth will lead to an 'inexorable improvement in the environment' (p. 195). Ridley states unequivocally: 'So the human race will continue to expand [...] The twenty-first century will be a magnificent

time to be alive' (p. 359). Peiser has a categorical faith that we do not face any crucial tipping points, beyond which it would be impossible for us to prevent catastrophic climate change: 'this argument it would be too late, I don't buy that, I think there will always be enough time' (Peiser 2017). Lomborg states, without reservation, 'We are not running out of energy or natural resources. There will be more and more food per head of population' (2001, p. 4). About climate change, he is equally confident: 'its total impact will not pose a devastating problem for our future', so 'we need to worry less about global warming in the long run' (2001, pp. 4, 19). For example, 'it seems likely [...] virtually no one will be exposed to annual sea flooding' (2001, p. 290). In fact, 'Global warming will not decrease food production, it will probably not increase storminess or the frequency of hurricanes, it will not increase the impact of malaria or indeed cause more deaths' (2001, p. 317). Lomborg's confidence extends to the far future: 'A thousand years ago we did not use oil, and a thousand years from now we will probably be using solar, fusion or other technologies we have not yet thought of' (2001, p. 28). Julian Simon goes even further, expecting progress to continue for another seven million millennia and more: 'After our sun runs out of energy, there may be nuclear fusion, or some other suns to take care of our needs. We've got seven billion years to discover solutions to the theoretical problems that we have only been able to cook up in the past few centuries of progress in physics' (1996, p. 181).

4.5 Conclusion: a moral defence of growth

It was suggested in this chapter that in studying the arguments used by environmental sceptics we might be able to 'read off' the key values invoked in this discourse, and thus identify a vision of the good that it is seeking to defend. This is a moral defence, in other words; and we might perceive that it gains its emotional force, for those receptive to it, via a condemnation of the perceived moral shortcomings of its environmentalist adversaries. Are environmental sceptics sincere in these sentiments, or is such an assertion of moral superiority just a cynical ploy? And how much does this matter for what an observer might make as to those arguments?

Rhetorical criticism suggests one should take the use of moral justifications seriously, even if one would dismiss such claims as objectively illegitimate. In his analysis of rhetoric in historical context, Skinner (2002, pp. 149, 156) suggests that morality is at

the heart of rhetoric, in that it works by framing some things as being worthy of approval and others of disapproval. He stresses that the extent to which a rhetor personally believes in the moral ideals he or she invokes is immaterial: the rhetorical invocation of morality, if successful, will still key into, and reshape or reinforce, the boundaries of what it is socially acceptable—at least within a certain group—to say or do.

In the context of this chapter, the suggestion is that the rhetoric of environmental scepticism works by affirming the moral goodness of an ideology of growth and progress, and of those who defend it, against the moral critique of environmentalism. Surveying the preceding analysis of commonplaces we can find moralised defences of a belief in: individualism (the power to determine the truth for oneself), practical reason (we can understand, and thus manipulate, natural laws through observation and experiment), humanism (people are the most important and creative features of existence), material power (we will continue to enjoy ever-growing technological means to realise our will), an unbounded sense of destiny (mankind journeying into an endless future, on an infinite voyage of discovery), and the fundamental benevolence of our world (humanity has discovered the key to progressively improving life, a process that will continue indefinitely, so long as we do not lose faith in ourselves).

We might readily recognise this list as providing confirmation—from the opposite side of the debate—for Clive Hamilton’s analysis of environmentalism (highlighted in Chapter 1) as having been seen to ‘destabilize the ideas of progress and mastery of nature, which are traditionally understood as the basis of civilisation and “the American way of life”’ (Hamilton 2011, p. 34). These do appear to be the very things that environmental sceptics are defending. The advantage of employing Listening Rhetoric is hereby made clear: what was from the environmentalist perspective disparaged is here, listened to on its own terms, understood to be felt by a considerable number as an inspirational set of foundational values. If such values are incompatible with the limits thesis, and it is the case that the limits thesis must be respected, then it does not stop these values being treasured. Indeed, this scenario suggests itself as a crisis, fundamentally one of philosophical anthropology: who are we, and how should we live, if we are now to believe that the foundational ideals of modernity will not continue forever?

5: ‘The Economy in Mind’: An ideational analysis of ‘economic reality’ as deployed within environmental debate

In the last chapter I subjected the commonplaces of environmental scepticism to rhetorical analysis, observing that commonplaces are the value-laden building blocks which enable rhetors to articulate an argument, holding some things up as being praiseworthy and others worthy of blame. In this way I sought to build up a picture of the ethical beliefs of environmental sceptics, the vision of the good that they are motivated to defend. In this chapter I aim to build on this analysis, turning my attention from the ethics of growthism to its ontology.

This is to say—following Charles Taylor (2003) again at this point—an ethical vision cannot but assert and be grounded in a view of reality: what we think is good (human conduct), not only rests on a vision of what we think is true (reality in total), but is actively involved in constituting our experience of life (reality for us). Taylor argues against naturalists who, believing that ontology is exclusively described by science in a post-Galilean age, can find no room for human values as such among ‘the furniture of the universe’ (Taylor 2003, p. 514): existing nowhere outside of our minds, they argue, values have a merely subjective existence, and thus need to be translated into objective terms—by being ‘reduced’ to a biological or even chemical level of existence—in order to find a place on an ontological map of existence.

Against this, Taylor responds with a two-stage argument. First, reductivism cannot gainsay our phenomenological experience of understanding and admiring virtues such as ‘courageous’, ‘generous’, and ‘noble’: even if one were to hold that our experience could fundamentally be ‘explained’ with reference to some underlying physical process, that would do nothing to abolish the fact that our experience of *feeling* what values mean to us exists. Second, that experience necessarily asserts something about existence which lies beyond itself: concepts such as ‘courageous’ can never be exhaustively defined with reference to some mechanical mental association of different concrete examples we categorise together under that heading, nor reduced to our emotion as we recognise such examples as corresponding to the same pattern. Rather, ‘courageous’ has a meaning in its

own right which we invoke whenever we apply it: this is precisely what we recognise as we associate individual cases of it together.

Ethics, in other words, inescapably involves ontology: human values *exist* as we think about them; and this existence has an independence which lies beyond our thinking activity.⁵⁵ Granting this be true we might still want to ask why it is that some people recognise such values as courageous or noble in some cases and not in others. This means recognising the ontological reality not only of values, but of ideational pictures of reality that are infused with values, and which inform them in return. That is, what makes a world-view distinct is not only its favoured values, but its understanding of how these are inscribed in the world: its picture of the true underlying structure of reality, in accordance with which we should live, if we are to live well.

This yields the intellectual prospect to be explored in this chapter: to map out the key features of a certain landscape of belief, characteristic of the discourse of growthism, as to what the world is really like. I aim here to work with what Finlayson, referring to Weber's concept of 'world images' (Weber 1946, p. 280)—'conceptions of the cosmos which give people an existential orientation' (Finlayson 2018, p. 598)—describes as 'an underlying "metaphysics"—an image of the world linked with a belief in redemption' (Finlayson 2018, p. 599). Here I am referring to the investigation of such pictures of reality as 'ideational analysis', seeking by this to underline that the focus of this inquiry is not on the use of words by the rhetors within a discourse, or the values they appeal to, so much as on the 'world images'—the picture of reality—their utterances are built on. This necessarily means going beyond the practice of the last chapter (closely attending to what

⁵⁵ We could understand the distinction implicit here as lying between the *mental* (human consciousness) and the *ideational* (the conceptual contents of consciousness); each should be recognised as a distinct ontological dimension in their own right. This distinction being made here is informed by Karl Popper's Three Worlds ontology (Popper and Eccles 1977). Popper divides human existence into three dimensions: World 1 is the physical, World 2 the mental (what goes on inside an individual's mind), and World 3 the ideational ('the products of the human mind, such as stories, explanatory myths, tools, scientific theories (whether true or false), scientific problems, social institutions, and works of art', p 38). As he stresses (p 56), 'World 3 objects just are not "ideas in our minds": though they subsist nowhere outside of minds, yet they are not identical with minds, and nor are they imprisoned within them. This goes beyond even the understanding that, as it predates us and imposes structure on what we may articulate, 'language thinks us'. Popper makes much of examples such as logical flaws in a new theory of which its originator is unaware: features of an ideational structure which exist, which indeed have been invented by human minds—but not yet been discovered by them. Ideational objects thus (1977, p. 40) 'have a certain degree of *autonomy*: they may have, objectively, consequences of which nobody so far has thought, and which may be *discovered*; discovered in the same sense in which an existing but so far unknown plant or animal may be discovered.'

rhetors have actually said): here a further step will be taken in seeking to reconstruct an underlying picture that may only be implicitly defined in utterance.⁵⁶

What we will find in this chapter is a striking feature of the world image that growthist discourse frequently draws on: a vision of mankind as collectively employing its individual intelligences to turn matter into mind. It is this which provides the intellectual basis for the confidence growthists have in their case: they argue that it is possible to overcome physical limits to growth by infusing matter with the limitless qualities of mind.⁵⁷

This chapter is structured as follows: In section 5.1 I set out the key elements of a story, repeatedly told by antagonists to the limits thesis, as to how mankind should remain able to evade environmental limits for the foreseeable future. I observe that this story is often repeated in a superficial manner by a wide variety of commentators; and thus that to understand it better we will need to attend more closely to the thinkers who have constructed and disseminated it. In 5.2 I subject the story introduced in 5.1 to detailed ideational analysis. This is divided into four parts: in the first, I analyse the role of the human mind within this story; second, the role of markets; third, an assumed law of technological progress; and fourth, the concept of ‘economic reality’ which these preceding ideas help to generate. Finally, in 5.3 I conclude by summarising my findings.

5.1 The story of eternal growth

In October 2018 the Nobel Prize for Economics (formally the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel) was awarded jointly to Paul Romer and

⁵⁶ In this I am also drawing in part on Freeden’s (1996) work on ideological analysis. Freeden places great emphasis on the reconstruction of intellectual structures (‘universes of meaning’) which, while defining a distinct ideology or world-view, often remain only implicit within the utterances of those who subscribe to it. Freeden’s outlook on the relationship between rhetorical and ideological analysis relates to the distinction made here between the approach in the last chapter and that in this: recognising the value of rhetorical analysis, he argues (1996, p. 36) that it will also ‘be separately decodable on the unconscious level—a level underrated by students of rhetoric—and serve as a clue to more deeply held, and occasionally more complex, beliefs.’

⁵⁷ The analysis in this chapter seeks to complement that by Mirowski and Nik-Khan (2017) in their treatment of the idea of ‘information’—a weightless, mathematised quality, as opposed to the material business of production and consumption—around which economics has become increasingly based since the Second World War. While drawing on their analysis, this chapter seeks to do something different—by focusing both on the applied example of the limits to growth debate, and on an underlying picture of reality this implies.

William Nordhaus. Romer, celebrated as a pioneer of ‘endogenous growth theory’, was awarded the prize ‘for integrating technological innovations into long-run macroeconomic analysis’; Nordhaus received his award ‘for integrating climate change into long-run macroeconomic analysis’. Taken together they were adjudged to ‘have designed methods for addressing some of our time’s most basic and pressing questions about how we create long-term sustained and sustainable economic growth.’ The Royal Swedish Academy of Sciences summarised how their work intersected as follows: ‘Nature dictates the main constraints on economic growth and our knowledge determines how well we deal with these constraints’ (2018). Romer’s work was thus presented as concerning the economics of reconciling growth with environmental limits.

Among environmental sceptics, Romer’s award was typically celebrated as a validation of their position, and Romer’s work portrayed as refuting the ‘limits thesis’. To take one example (Bailey 2018):

Romer won based on his conceptual overthrow of old-fashioned limits-to-growth economics. As the Nobel Committee notes, Romer ‘showed that growth driven by the accumulation of ideas, unlike growth driven by the accumulation of physical capital, does not have to experience decreasing returns. In other words, ideas-driven growth can be sustained over time.’ Economic growth and wealth creation is limited only if one believes that human ingenuity is limited. [...] Romer's New Growth Theory [...] transforms economics from a 'dismal science' that describes a world of scarcity and diminishing returns into a discipline that reveals a path toward constant improvement and unlimited potential.

Another such tribute was given by the ecomodernist Michael Liebreich in an article entitled ‘The Secret of Eternal Growth’ (2018). In using Romer’s work to suggest that ongoing economic growth is compatible with mitigating climate change, Liebreich makes the far-reaching claim that ‘there is nothing in physics to stop the economy from growing forever.’ How can this argument be supported? Liebreich begins by criticising the way in which environmentalists have sought to ground the ‘limits thesis’ in the physics of entropy as being an example of ‘fake science’. This is because, while ‘The Second Law of Thermodynamics states that entropy can only ever increase in an isolated system [..., the] earth, however, is not an isolated system [...], as it receives a huge daily flux of energy from the sun.’ Thus solar power ‘could well be’ the ‘key to endless growth’, ‘proving that the economy can grow for as long as there is still a sun in the sky (which would give us about another five billion years).’ But it is not only energy from the sun that will allow for

such seemingly endless growth; it is also human ingenuity, which will enable us to progressively dematerialise the economy entirely: ‘material efficiency and recycling will improve indefinitely; the extraction of materials and production of pollution will first peak and then asymptote to zero.’ This combination of ‘unlimited knowledge’ and clean energy will thereby ‘drive endless improvements in human wellbeing and flourishing.’ He concludes: ‘We should approach the task with optimism [...] because, as Ronald Reagan (displaying a more thorough understanding of thermodynamics and economics than the entire degrowth crowd) once said: “There are no such things as limits to growth, because there are no limits on the human capacity for intelligence, imagination, and wonder.”’

As Liebreich’s reference suggests, this is a well-worn argument, which President Reagan did much to popularise in the 1980s. Reagan himself (and his speechwriters) drew on arguments which were developed by a number of environmentally sceptic writers and economists, notably Julian Simon. In Simon’s obituary, the neoliberal Cato Institute, to which he had been attached, remembered that, ‘Among the many prominent converts to the Julian Simon world view on population and environmental issues were Ronald Reagan’ (Moore 1998), a recollection echoed more recently by Bill Gates (2013). Simon, in turn, drew—and exerted his own influence—upon a range of economists whose primary focus lay outside the environment. Chief among these was Friedrich von Hayek (Aligica 2009), who wrote to Simon with excitement: ‘I have never before written a fan letter to a professional colleague, but to discover that you have in your *Economics of Population Growth* provided the empirical evidence for what with me is the result of a life-time of theoretical speculation, is too exciting an experience not to share it with you’. Simon was evidently so proud to receive such fan mail from ‘as great an economist as has lived in the 20th Century’ that he published it in an appendix to one of his books (1996, pp. 614–15). It might, indeed, be possible to talk of a Hayek-Simon-Reagan axis of ideas—Hayek providing the main framework of economic ideas, Simon developing these specifically to counter the ‘limits thesis’, and Reagan communicating the sentiments at their heart to a mass audience.

What are these ideas in outline? In books such as *The Ultimate Resource 2* (1996) Simon countered the ‘limits thesis’ with an argument that could be perhaps reduced to five main propositions:

- that human imagination and ingenuity, being not physical, are limitless—thus people are the ‘ultimate resource’;
- that it is by participating in the market, and receiving price signals to indicate resource scarcity, that ingenuity is incentivised and trained to solve the most economically important problems, with the market’s collective wisdom ensuring that the best solutions are selected—thus government intervention will only impede the overcoming of environmental limits;
- that physical resources are in principle fully interchangeable, and that with enough energy it is possible to synthesise any particular resources we wish—thus energy is the ‘master resource’;
- that solar energy ensures the Earth is not a closed system (and thus not limited by the physics of entropy)—providing us with effectively limitless supplies of the master resource, and enabling us, over time, to invent and accomplish anything we want; and
- that human wants are insatiable, and that it is precisely in continually seeking to realise our unlimited desires that we create progress—thus the limitlessness of human desires is intrinsically bound up with the process which leads to their continual realisation, that is, growth.

We might, with reference to Liebreich’s article, dub the totality of these ideas ‘The story of eternal growth’. Individual elements of this story, if not the whole ensemble, have become aspects of common sense in much subsequent debate on environmental resources. Wattenberg (1998), for example, summed up Simon’s intellectual legacy as instilling the awareness that: ‘Supplies of natural resources are not finite in any serious way; they are created by the intellect of man, an always renewable resource.’ Worstall—who has confirmed to me: ‘Julian Simon, I agree with his basic thesis, obviously enough’ (Worstall 2019)—instantiates this legacy (2010, pp. 52–3) in arguing that indefinite growth is possible even in a world of limited resources, so long as ‘We recycle everything, which given enough energy we can do’, and that, ‘Our bottom line here is that the physical world is not the defining limit upon economic growth: human ingenuity is.’ Another environmental sceptic, Cater (2013), also finds the source of wealth not to be natural resources but ‘the infinitely renewable resource of human ingenuity’. For Ben-Ami (2012, p. 131), ‘The power of human ingenuity can lead to the creation and

production of new resources. Therefore limits which appear natural can be overcome.’ The humourist P.J. O’Rourke reflects the penetration of these ideas into general conversation in commenting that: ‘The real source of energy is human intellect. It’s infinitely renewable. It produces no emissions except a puff of CO₂ when smart people say, “Aha!”’ (in Huber and Mills 2005, p. 3).

These and other aspects of this ‘story’ have proven appealing not only to environmental scepticism but to both ecomodernism and Promethean socialism. Representing an ecomodernist sensibility, Naam suggests (2013, p. 309) that ‘Simon’s core insight is as profound and important now as it was during his life. Human minds are, indeed, the source of all wealth.’ Mark Lynas suggests (2018) that access to potentially infinite energy sources could enable economic growth to continue indefinitely: ‘if you have 100%-ish recycling economy, you can have growth with just an increasing energy input, and energy is not finite in any meaningful sense. There’s tons of fission, fusion, solar energy out there, more than you could ever want to put into the Earth’s system’. Another example comes from Charles Leadbeater, who writes (2003, p. 140): ‘Throughout the 1970s there were repeated resource panics about what would happen when oil, land and food would run out for the world’s rapidly expanding population. Those panics have proved misplaced largely because [...] physical resources are mainly fixed in our minds by what we think it is possible to do with them. Scientific and technical ingenuity helps to expand them.’ For Bret Stephens (2018), ‘past predictions of imminent disaster didn’t come to pass [...] because our Promethean species has shown the will and the wizardry to master the challenge’. Recanting from his endorsement of the ‘limits thesis’ in the 1970s, Michael Allaby has written (1995, p. 178) that this ‘mistake arose from our gross underestimate of human ingenuity, the one resource that appears to be infinitely renewable and incapable of depletion.’ From a Promethean socialist standpoint, meanwhile, Leigh Phillips has written (2015, p. 259): ‘We, uniquely in nature, have an infinite capacity for ingenuity, what Julian Simon, the libertarian economist [...] called the *ultimate resource*.’

Such comments reflect the fact that the story which Simon helped to construct, and which Reagan helped to popularise, has become common currency among those who take issue with the limits thesis. Its terms have become rhetorical commonplaces, in other words. In becoming such, they are available for rhetors to draw on without needing to think about their theoretical construction, or what they imply about the way the world

is structured. In this sense, rhetors who tell this story—especially when they are not themselves environmental sceptics—may find themselves invoking an underlying ontology without fully realising it. In order to understand what is going on in a philosophical sense when this story is being told—what needs to be the true state of the world in order for this story to be true—we need to inspect it on a deeper level of theory.

5.2 An ideational analysis of ‘economic reality’

With this understanding behind us, how might we analyse the key features of the ideational structure implied by ‘The story of eternal growth’? The analysis carried out here begins by focusing on explicit statements (predominantly made by environmental sceptics, but also drawing on statements made by ecomodernists and Promethean socialists, or by a wider field of economists, where relevant); then groups these by theme; before interpretively extending what has been said to the ontological beliefs it appears to be based in.

The world as mind

If there is a single fundamental belief about reality underlying environmental scepticism, it is the belief that the world *is* mind—or, rather, is progressively becoming so. This is to say, the mental is conceived of as being limitless; and through economic growth (most often understood as the market-driven application of innovation to overcome material limitations), the material world is increasingly made subject to (its resistance to our will dissolved by) the mental, and so is infused with the mental’s quality of limitlessness.

To begin to unpack and justify the elements of this summary, let us start with the beliefs about the nature of mind in this discourse. The characteristic mode of mental activity recognised—indeed, idolised—here is fantasy, whose very essence is its independence from reality, its lack of constraints. The speeches of Ronald Reagan are emblematic in this regard, being littered with references to ‘dreams’ and ‘imagination’. Most prominently, he chose to include in his second inaugural address—underlining the extent to which this was central to his political vision, and through his rhetoric seeking to define a whole nation by it—the following remarks: ‘We believed then and now: There are

no limits to growth and human progress when men and women are free to follow their dreams. And we were right—and we were right to believe that’ (Reagan 1985). On another occasion (the one referenced by Liebreich in ‘The secret of eternal growth’) he said (1983): ‘There are no such things as limits to growth, because [...] it’s not what’s inside the Earth that counts, but what’s inside your minds and hearts, because that’s the stuff that dreams are made of, and America’s future is in your dreams. Make them come true.’ In other speeches he described ‘the economy of the future [...] forming right now in the minds and imaginations of entrepreneurs’, and let us know that: ‘We’re rapidly moving from the economy of the Industrial Revolution—an economy feeding on and tied to the Earth’s physical resources—to, as one economist titled his book, *The Economy in Mind*, in which human imagination and the freedom to create are the most precious natural resources’ (Reagan 1988). Indeed, ‘in this new economy *mind replaces matter*, human invention makes physical resources obsolete. [...] Rather than being imprisoned in a world of shrinking natural resources, we’re transcending them, moving to a new era of seemingly *limitless horizons*’ (emphasis added) (Reagan 1988).

Another aspect to this idea of the limitlessness of the mental which supports this discourse is the belief in the insatiability of human desires. While this is a central intellectual pillar of environmental scepticism, it is an idea drawn from the wider discourse of economics—having been a central feature of orthodox economics stretching back at least as far as the ‘marginal revolution’ of the late nineteenth century (Gagnier 2000). Durkheim famously wrote about ‘the malady of infinite aspirations’ (1973 [1925], p. 40) afflicting those in modern, commercial society, who have lost connection with regulatory ideas and institutions whose job it is to impose manageable limits on our desires: this is a malady, a ‘morbid desire’ (1997 [1897], p. 271), because it can never be satisfied, the searching after more never come to an end. In a recent work, *The Infinite Desire for Growth*, Daniel Cohen observes (2018, pp. 151–2): ‘Like a walker who never reaches the horizon, the modern individual wants to grow ever richer, not understanding that such wealth, once it has been achieved, will become the normal state of affairs, from which she will again want to distance herself. [...] H]uman desire is profoundly malleable, influenced by the social circumstances in which it finds expression. That makes it insatiable, infinite.’ That Cohen can write this, despite himself being critical of the unsustainability of our ongoing pursuit of growth, underlines the extent to which this has become ingrained as an article of faith within the profession of economics. It is this

tension—summed up better by its original title, *Le monde est clos et le desir infini*—which enables the book to present the modern story in the form of a tragedy. Something very similar can be observed in Lester Thurow’s *Zero-Sum Society*, which equally finds (1981, p. 120) something tragic in the inability of economic growth ever to provide fulfilment, given that ‘Man is an acquisitive animal whose wants cannot be satiated.’ Christopher Lasch traces this idea—‘The decisive break with older ways of thinking came when human needs came to be seen not as natural but as historical and constantly changing, hence insatiable’—back to the foundations of classical political economy in the eighteenth century. As he outlines it, these were the beginnings of economic growth: the ‘assumption that people’s appetites, formerly condemned as a source of social instability and personal unhappiness, could drive the economic machine—just as people’s insatiable curiosity drove the scientific project—and thus insure a never-ending expansion of productive forces’ (1989, p. 28). Others have traced this back further, to the seventeenth century, finding in Thomas Hobbes the first ‘modern economist’ for his analysis of life as the continual motion of desires (Babe and Babe 2006, Domínguez *et al.* 2017).

Within the discourse of environmental scepticism, this sense of innate insatiability can be used to characterise the collective modern project, as when Arnold writes (1996, p. 23): ‘The glory of the “dominant Western worldview” so scorned by environmental ideologists is its metaphor of progress: the starburst, an insatiable and interminable outreach after a perpetually flying goal.’ More prosaically, it may be cited as a fact of human nature which simultaneously justifies a seemingly ‘unsustainable’ use of natural resources: ‘Mankind is unique. Only of humans is it true that they often seem to want to dominate not merely large numbers of their fellows but also every habitat they see. We have boundless ambition, and a limitless list of whims to gratify’ (North 1995, p. 7). In the most triumphalist terms, Huber and Mills (2005, pp. xxvii, xxix, 155) declare: ‘Demand for energy is as insatiable as demand for information, time, order, and life itself. [...] We will never stop craving more, nor should we ever wish to. [...] We will never stop wanting more [...] because we are built to want more of these things, an unlimited more.’

A further respect in which the mental is conceived of as boundless within this discourse concerns the idea of ingenuity. If human desires are seen as being insatiable, then ingenuity—mankind’s problem-solving ability—is depicted as being equally unlimited. This outlook is classically represented by Hayek (1979 [1944], p. 12), in writing: ‘Wherever the barriers to the free exercise of human ingenuity were removed, man

became rapidly able to satisfy ever-widening ranges of desires.’ Within environmental debate specifically, plentiful examples of this outlook can be found: for example, in Huber and Mills (2005, pp. xix, xxvii), for whom, ‘we [can] attain the impossible—infinite energy, perpetual motion, and the triumph of power.’ This is because, ‘Energy supplies are determined mainly by how cleverly we’re able to impose logic and order on the mountains and catacombs of energy that surround and envelope us’—that is to say, natural resources are as unlimited as our mental faculties of invention.

For Julian Simon, this creative potential in each mind leads to the principle that the more people there are, the better:

The major constraint upon the human capacity to enjoy unlimited minerals, energy, and other raw materials at acceptable prices is knowledge. And the source of knowledge is the human mind. Ultimately, then, the key constraint is human imagination acting together with educated skills. This is why an increase of human beings, along with causing an additional consumption of resources, constitutes a crucial addition to the stock of natural resources. (Simon 1996b, p. 408.)

Or as he puts it (1996, p. 589), ‘The ultimate resource is people—skilled, spirited, and hopeful people—who will exert their wills and imaginations for their own benefit as well as in a spirit of faith and social concern. Inevitably they will benefit not only themselves but the poor and the rest of us as well.’

This argument that, thanks to human ingenuity, ‘people are not a drain on the resources of the planet’ (Kemp 1984), as a prominent Reagan-era Republican Party politician put it, has been highly influential in debates on overpopulation (Bartlett 2012). It has also had a large impact on arguments made in respect to the ‘limits thesis’ on the finitude of natural resources—as reflected in the kind of comments encountered earlier, from Wattenberg and others.

It is here that we see, not only a conception of the mental as limitless, but its projection onto physical reality, specifically ‘the environment’, conceived of as the material basis for economic activity. This projection has more than one level. Its primary level is a simple one, based on linking the ethereal, inexhaustible qualities of purely mental objects with the ideas we have of physical resources, as we conjecture about the potential uses we might make of them. In this fashion, Simon writes (1996, p. 583) about viewing ‘the resource system as being as unlimited as the number of thoughts a person

might have', simultaneously linking a concept of nature both with the idea of the limitless ingenuity which would unlock its secrets, and with the weightless quality of that mental activity itself.

In another passage, Simon goes into a deeper meditation about this quality of mind and its relationship to the physical world (1996, p. 67):

A conceptual quantity is not finite or infinite in itself. Rather it is finite or infinite if you make it so—by your own definitions. If you define the subject of discussion suitably, and sufficiently closely so that it can be counted, then it is finite—for example, the money in your wallet or the socks in your top drawer. But without sufficient definition the subject is not finite—for example, the thoughts in your head, the strength of your wish to go to Turkey, your dog's love for you, the number of points in a one-inch line. You can, of course, develop definitions that will make these quantities finite, which shows that the finiteness inheres in you and in your definitions rather than in the money, love, or one-inch lines themselves. There is no necessity either in logic or in historical trends to state that the supply of any given resource is 'finite,' and to do so leads into error.

Natural resources—physical deposits of minerals, areas of land available for agriculture, freshwater aquifers, living fisheries—are thus likened in quality by Simon to concepts and emotions (even the emotions of a dog!). Simon's argument is that all things, physical as well as mental, are innately indefinable and unquantifiable until we decide to impose definitions and quantifications upon them—but in such cases we will be *imposing* this finiteness on the thing we are thinking about, which remains in itself indefinable. In a similar way Simon remarks (1996, p. 42), 'the question of how much a resource is "really" in the Earth is like the question, "Is there a sound in the forest when a tree falls but no one is nearby to hear it?"': without the imposition of quantification by humans, natural resources exist in an undefined, unbounded state. And for Simon, any such quantification is illegitimate, a falsehood: that is to say, 'natural resources [...] cannot be measured.' From this 'I draw the logical conclusion: Natural resources are not finite' (1996, p. 54). He tells us (1996, p. 50): 'finiteness is a destructive bogeyman, without scientific foundation.'

Simon's argument reveals much about the status of mind in his philosophy, and the relationship he conceives it as having with the physical world. As he describes it, the physical has the weightless, undifferentiated, and protean qualities of the mental. It only becomes finite when we choose to impose the idea of boundedness upon it—particularly

via numerical quantification, something intrinsically abstract (and thus ‘downright misleading when applied to natural resources’ (1996, p. 62)), given mathematics is ‘definitional’ rather than ‘empirical’ (1996, p. 66).⁵⁸

Again, Simon’s reasoning here has been influential. A good example can be found in the Promethean socialist writing of Leigh Phillips (2015, pp. 58–9):

A more developed understanding of the finite and infinite is helpful for this discussion. Think of a single rubber ball. Like the Earth, it is bounded in the sense that very clearly there is an edge to the ball and there is only so much of it. It doesn’t go on forever. It is not boundless. And there is only one of them. But it is infinitely divisible in the sense that you can cut it in half, then cut that half in half again, then cut that quarter in half, then that eighth in half, and so on. In principle, with this imaginary ball, you can keep cutting it up for as long as you like, infinitely extracting from this finite object. [...] Thus, counter-intuitively, you can actually have infinite growth on a finite planet.

Phillips can be seen here following Simon’s lead in imagining a physical object to have the same abstract quality as an idea of it, rendering it infinitely divisible in the same way as Simon’s example of the ‘one-inch line’ that can be divided into an infinite ‘number of points’—such ‘points’, having no length, remaining entirely abstract objects, without any physical reality.

Displaying a similarly abstract picture of the world, Bastani sees modern science—the genome sequence, for instance—and modern economics—as embodied in the tech firms of Silicon Valley—as having demonstrated that what makes all things valuable and distinctive is the immaterial information they carry. This he sees as the key to producing limitless abundance. For if ‘the bounty of nature is highly complex arrangements of information’, then nature can effectively be translated into digital form—and thereby processed, manipulated, and improved. In the future we will ‘finally grasp the underlying informational rhythms to overcome nearly all forms of disease and feed a world of 10 billion people while using less, rather than more, of our planet’s bio-capacity’ (Bastani 2019, pp. 167, 39).

⁵⁸ There is a resonance here with the postwar development of economics into a social science of ‘information’; as Mirowski and Nik-Khah (2017, p. 45) remind us, ‘information’ comes originally from the Latin verb ‘*informare* – to give form to; to shape; to mold. Information at its birth was the act of *infusion with form*. Where, and how? In the beginning, the forming takes place *in the mind*.’

The market as a network of minds

A secondary level on which the limitlessness of the mental is projected onto the physical requires the interaction of the mental with something else: the market.⁵⁹ Or rather, it requires the interaction of minds with each other. That is to say, in the work of Simon and others—drawing on that of economists, notably Hayek—it is in the market that minds are put into contact with each other, generating a kind of collective intelligence.⁶⁰ As Ridley (2010, p. 281) puts it: ‘It is my proposition that the human race has become a collective problem-solving machine and it solves its problems by changing its ways. It does so through invention driven often by the market: scarcity drives up price; that encourages the development of alternatives and of efficiencies.’ Postrel (1998, p. 35) describes the market as ‘a process, a decentralized system for discovering and sharing knowledge, for trading and expressing value’.

The mechanism which connects each mind to the market is that of *economic incentive*, the motivation to make money. This is what trains an individual’s ingenuity towards working on those problems which are most highly valued by society, by minds in aggregate: as Reagan put it (Reagan 1985), ‘Freedom and incentives unleash the drive and entrepreneurial genius that are the core of human progress.’ As Simon expands on the same point (1996, p. 408):

We must remember, however, that human imagination can flourish only if the economic system gives individuals the freedom to exercise their talents and to take advantage of opportunities. So another crucial element in the economics of resources and population is the extent to which the political-legal-economic system provides personal freedom from government coercion. Skilled persons require an appropriate framework that provides incentives for working hard and taking risks, enabling their talents to flower and come to fruition. The key elements

⁵⁹ Though not for the Promethean socialists, who instead see the possibility of applying computing power to boost the effectiveness of rational planning, thereby realising humanity’s collective problem-solving potential. Some socialist writers (Cockshott and Cottrell 1993, Mason 2015; see Morozov 2019 for a perceptive discussion) have argued that advances in ‘big data’ processing mean the ‘Socialist calculation debate’—in which Hayek had argued that the market would always generate more accurate information about people’s wants and the economy’s needs than state planners could hope to calculate by themselves—could finally be won by the socialists. Phillips (writing with Rozworski (2019)) makes a related argument, praised by Bastani (2020).

⁶⁰ Mirowski and Nik-Khah (2017, pp. 54–55): the ‘dominant cultural doctrine [...] emanated from Friedrich Hayek [...] wherein “the market” is posited to be an information processor more powerful than any human brain, but essentially patterned upon brain/computation metaphors’ (original emphasis).

of such a framework are economic liberty, respect for property, and fair and sensible rules of the market that are enforced equally for all.

Or as Simon clarifies, ‘The ultimate resource is’ not just people but, to be more accurate, ‘the human imagination in a free society’ (1996, p. 407).

Economic incentives are not the whole story when it comes to the role of the market, however. That which generates and transmits this information as to the economically most important problems to solve, meanwhile, is the *price mechanism*. As Milton Friedman explains (Ravaioli 1995, p. 33): ‘When resources are really limited prices go up [...] Suppose oil became scarce: the price would go up, and people would start using other energy sources. In a proper price system the market can take of the problem.’

Together, these mechanisms of the market are presented as that which enables us collectively to harness the potential of our individual powers of ingenuity. It is this which facilitates the enormous confidence with which environmental sceptics tend to regard the market’s capacity to solve all and any of our environmental problems. Postrel provides an example of such confidence in describing (1998, p. 51) ‘the common claim that we are “running out of resources” ’ as ‘a prophecy *inevitably* contradicted by dynamic developments [i.e., the market]’ (emphasis added). For Wilfred Beckerman, the market means ‘we will never run out of anything at all. Anything’ (in Douglas 2007, p. 554). Writing with Joanna Pasek, Beckerman comments (2001, pp. 194–5): ‘Nor is there any danger that economic growth will be hampered at all by any limit on the supply of so-called “finite resources”.’ As they explain:

The main reason why we will never run out of any resource, or even suffer seriously from any sudden reduction in its supply, is a very simple one. It is that whenever demand for any particular material begins to run up against supply limitations a wide variety of economic forces is set in motion to remedy the situation. These start with a rise in price, which, in turn leads to all sorts of secondary favourable feed-backs, notably a shift to substitutes, an increase in exploration, and technical progress that brings down the costs of exploration and refining and processing as well as the costs of the substitutes. (Beckerman and Pasek 2001, p. 101.)

Looking into the far future, Beckerman is prepared to concede that we may be faced by overall resource shortages. But even then, his confidence in our ability to carry

on regardless remains undented: for, having made the assumption (1974, pp. 234–5) that such a ‘limit is to be reached in 100 million years’, he suggests that

we might well assume that some way out of the difficulty would have been found by then. After all, when one ponders on the fantastical technological progress that has been made in the last twenty or fifty years, the mind boggles at the progress that will be made over the next 100 million years. Tautologies about finite resources, therefore, although they are apt to be triumphantly repeated over and over again by the eco-doomsters, are really not much help in the decision-making process.

Technological progress as a law of historical development

These last remarks of Beckerman’s point towards another respect in which the limitlessness of the mental is projected onto the physical. Here it comes in the form of a posited law of technological progress. What this means is that an observation of historical progress since the industrial revolution is first hypostasised into a law of history, and thereby assumed to hold for the foreseeable future; it is then projected forwards into a speculative consideration of the far future, by which time, through a simple additive process, it is assumed our technological capacities will have grown to near infinite abilities to translate will into reality; before this impression of near infinite power is projected backwards again into the present, and onto the agency—market-driven ingenuity—held to be responsible for the historical progress witnessed to date. As a final move, the omnipotent powers of this agency are projected onto nature; or, rather, nature is viewed as being incorporated by these powers, becoming our creation, to be manipulated—exploited, improved, fixed—as we see fit. And if we are not quite equipped to control nature as we would like right now, it is only a matter of time before we will, thanks to this cumulative law of progress.

Ridley (2010, p. 346) provides an illustrative example of such thinking, making definitive pronouncements on future technological advances, while saying—on the basis of the same reasoning—that the creative power which leads to such advances is so protean that its future development is impossible to predict:

The future will feature ideas that are barely glints in engineers’ ideas right now—devices in space to harness the solar wind, say, or the rotational energy of the earth; or devices to shade the planet with

mirrors placed at the Lagrange Point between the sun and the earth. How do I know? Because ingenuity is rampant as never before in this massively networked world and the rate of innovation is accelerating, through serendipitous searching, not deliberate planning. When asked at the Chicago World Fair in 1893 which invention would most likely have a big impact in the twentieth century, nobody mentioned the automobile, let alone the mobile phone. So even more today you cannot begin to imagine the technologies that will be portentous and commonplace in 2100.

Translated into Promethean socialist terms (i.e. focusing on technological progress outside of the market), Phillips, too, looks forward to the far future, and warns that this prophecy will be undone if the limitists get their way: 'Imagine what wonders a ten-million-year-old scientific civilisation will have achieved! To call for a steady-state economy, to oppose growth, is to foreclose all the rest of the spectacular deeds that would otherwise lie in humanity's future' (Phillips 2015, p. 260).

Julian Simon is again a revealing guide as to the development of this thinking. He begins with the observation, following Barnett and Morse (1967), that over a period of some decades stretching back into the Victorian era the price of most natural resources has tended to decrease. From this, Simon formulates what he calls his 'Grand Theory' (1996, p. 12): 'Greater consumption due to an increase in population and growth of income heightens scarcity and induces price run-ups. A higher price represents an opportunity that leads inventors and business-people to seek new ways to satisfy the shortages. [... T]he final result is that we end up better off than if the original shortage problems had never arisen.' This is supported by a further explanatory theory, which suggests that (1996, pp. 76-7):

humankind has evolved culturally (and perhaps also genetically) in such a manner that our patterns of behaviour (with social rules and customs being a crucial part of these patterns) predispose us to deal successfully with resource scarcity. This view of human history is consistent with the observed long-term trend toward greater resource availability, and with the positive (and growing) preponderance of our creative over our exploitative activities. This view provides a causal foundation for the observed benign resource trends. It argues against our being at a turning point in resource history, and thereby buttresses the technique of simply extrapolating from past trends that produces forecasts of increasing rather than decreasing resource availability.

Finally, these theories are presented in the form of a theory of historical development:

At work is a general process that underlies all the specific findings in the book: humans on average build a bit more than they destroy, and create a bit more than they use up. This process is, as the physicists say, an ‘invariancy’ applying to all metals, all fuels, all foods, and all other measures of human welfare, in almost all countries at almost all times; it can be thought of as a theory of economic history. The crucial evidence for the existence of this process is the fact that each generation leaves a bit more true wealth—the resources to create material and nonmaterial goods—than the generation began with (Simon 1996, p. 582).

Having faith in this theory of history, Simon believes (1996, p. 578) there is ‘stronger reason than ever to believe that these progressive trends will continue *indefinitely*’ (emphasis added). Thus ‘there is no meaningful physical limit—even the commonly mentioned weight of the earth—to our capacity to keep growing *forever*’ (emphasis added). Even the death of the Sun need not impose final limits to growth: the Sun ‘will last perhaps seven billion years. And the chances would seem excellent that during that span of time humans will be in touch with other solar systems, or will find ways to convert the matter on other planets into the energy we need to continue longer’ (1996, p. 79). Given ‘We’ve got seven billion years to discover solutions [...] It’s reasonable to expect the supply of energy to continue becoming more available and less scarce, *forever*’ (emphasis added) (1996, p. 181).

What this theory of historical development gives rise to is an outlook which views the future as being simultaneously utterly deterministic and yet radically unforeseeable. What is determined is that mind will progressively conquer physical reality. It is also this which makes the future unknowable, since the more that reality does not present itself to us as an objective force with its own laws and logic, and the more it is instead shaped by mental invention, the less predictable it becomes. Supposedly eternal verities—such as ‘what goes up must come down’, the common sense analogue to the physics of entropy—are redescribed by this mentality as contingent truths, subject, like all things in the stream of progress, to obsolescence.

Simon sees the historical record of progress as already reason enough to doubt that humanity is limited by the laws of thermodynamics; projecting forwards, he anticipates that continued progress may eventually render those laws entirely irrelevant, or even prove them false. In one sense, this comes about through a fantasy about our future technological development, which might enable us to continually outrun the laws of

physics (1996, p. 81): ‘The concept of entropy simply doesn’t matter for human well-being. Our earthly island of order can grow indefinitely within the universal sea of chaos. Life could even spread from Earth to other planets, other galaxies, etc. incorporating an increasing portion of the universe’s matter and energy.’ In another sense, this comes about through speculation that ongoing scientific research may lead to new theories which disprove the laws of thermodynamics themselves:

The frequent assertion that of course our resources are finite is quite inconsistent with the fact that present scientific knowledge of our physical world is extraordinarily incomplete (and probably always must be). [...] Even if the Second Law [of thermodynamics] is correct—it’s only a century or so old—there is left to humanity a period perhaps 50,000,000 times that long to discover new principles before the sun runs out. [...] Can it be sensible to proceed as if our present ideas will forever remain unchanged and unimproved? (Simon 1996, pp. 80–1)

The nature of economic reality

The various factors described above are drawn together in the construction of an ontological theory, by which another dimension of reality is posited. Beyond the mental and physical, a dimension of ‘economic reality’ is imagined, which is regarded as combining them both. It is the physical world as subject to (in the process of being transformed by) the mental, or rather the collective mind of the market.

An illuminating example of this particular feature of thinking can be found in an exchange between Milton Friedman and Carla Ravaioli (Ravaioli 1995, p. 33):

FRIEDMAN: Take oil, for example. Everyone says it’s a limited resource: physically it may be, but economically we don’t know. Economically there is more oil today than there was a hundred years ago. When it was still under the ground and no one knew it was there, it wasn’t economically available. When resources are really limited prices go up, but the price of oil has gone down and down. [...]

RAVAIOLI: Of course the discovery of new oil wells has given the illusion of unlimited oil...

FRIEDMAN: Why an illusion?

RAVAIOLI: Because we know it’s a limited resource.

FRIEDMAN: Excuse me, it's not limited from an economic point of view.

Such language as used here by Friedman may easily be taken for granted as a mere figure of speech, but taken at face value it is an extraordinary description of the physical world—once regarded ‘economically’—as being in a state of flux, indeterminate, and in this sense infinite. This construction follows logically from the theoretical elements considered in this chapter. First, there is the idea that the availability and usefulness of natural resources is determined by the application of ingenuity, which is mental rather than physical, and itself defined by the property of limitlessness. Second, there is the idea that ingenuity works in harness with the market, which itself works through the price mechanism, providing a dynamic, ever-changing—thus indeterminate—sum of all the plans by individuals to unleash their ingenuity on the natural world. Third, is the idea of an effective law of technological progress, which assumes that the transformation of nature by ingenuity will continually improve over the long term. Together, these ideas add up to an outlook which views natural resources as being indeterminate—the number of years’ supply of a resource such as oil, for instance, being literally unknowable given assumptions as to future progress, so long as it remain subject to market-driven ingenuity.

Simon (1996, p. 62) provides many illustrations of this idea of economic reality, among them the argument that, ‘With the passage of time and the accumulation of technical knowledge, we learn how to obtain a given amount of service from an ever-smaller amount of a resource,’ and thus that, ‘if we cannot state *how to count* the total amount of a resource that could be available in the future, it should not be considered finite.’ He is far from alone. Ridley (2010, p. 303) explains: ‘The amount of oil left, the food-growing capacity of the world's farmland, even the regenerative capacity of the biosphere—these are not fixed numbers; they are dynamic variables produced by a constant negotiation between human ingenuity and natural constraints.’ Phillips (2015, p. 59) tells us: ‘So long as we can keep innovating, changing the rate at which we use a resource, *in principle* [...] you *can* actually have infinite growth on a finite planet.’ In one of the earliest works of environmental scepticism, John Maddox (1972, p. 5) observes: ‘In economic terms, the earth’s resources seem to be becoming more plentiful.’ Thurrow (1981, pp. 111–12) puts it this way:

God could undoubtedly tell us the number of tons of each non-renewable resource available in the planet Earth. It is a finite (but large) number; but it is also an irrelevant number. From the point of view of the economy, non-renewable natural resources are actually growing because of economic progress in finding new ore bodies, extracting low-concentration ores, recycling used materials, and developing renewable substitutes (optic fibres for copper wires).

As Thurrow (1981, p. 112) depicts it, quantities of natural resources are changing on a moment-by-moment basis via the action at a distance of market trading: ‘non-renewable resources supplies are expanding or contracting depending upon what is happening to relative prices. If prices are falling, resources are becoming more plentiful; if prices are rising, resources are becoming less plentiful.’ We might not be able to ask God how much in natural resources were available to us, but we have in the market—‘an *omnipotent* processor of information, That Than Which No Greater Can Be Conceived’ (Mirowski and Nik-Khan 2017, p. 239)—a more than adequate replacement.

What this outlook describes is a belief that humanity, via the market, is fundamentally altering reality, creating a new dimension of being: *economic reality*. This is revealed in particular clarity by the thought of the economist Warren T. Brookes, whose *The Economy in Mind* (1982) was singled out for praise in a speech made by President Reagan, referred to earlier. Brookes treads much the same ground as other writers featured here, not least Simon (to whom he acknowledges his debt). What distinguishes him is being happy to explicitly acknowledge the ontological aspect of this thought. He refers to ‘mind-wealth’ and ‘metaphysical capital’, states that ‘wealth and substance are essentially metaphysical (and therefore potentially unlimited) and individually generated’, and approvingly quotes Buckminster Fuller to the effect that: ‘Wealth is the progressive mastery of matter by mind’ (p. 34). As for Simon, energy is key in his understanding of the economy, but for Brookes ‘the real energy of the universe is mental and, therefore, infinite’ (p. 23). At the centre of his economics is the understanding that ‘our real wealth comes not from finite natural resources or uncertain material conditions, but from the triumph of the metaphysical over the physical, of attitudes over appearances’ (p. 25). His lesson is that we should ‘reject this construct of a strictly matter-based economy, and especially to reject the materialistic premise of environmental extremists that the Second Law of Thermodynamics is leading humanity quickly toward an entropy watershed in which the planet itself rebels against its inhabitants and their economic values’ (p. 25). The Second Law of Thermodynamics is irrelevant to

human civilisation, because of ‘the anti-entropic rush of human thought from the purely physical to the increasingly mental and metaphysical, a rush which, thus far at least, has far outdistanced the so-called narrowing resource base’ (p. 35). As for his view specifically on the construct of ‘economic reality’ via an effective law of technological development, he writes:

Our economic future is not now and never has been tied to the physical assets we now see, but to the vast untapped potential of creative thinking—the metaphysical process which can show us entirely new reserves and new and easier ways of doing things, extending value and increasing wealth without depleting our planet. The only impediment to this is a fearful or limited concept of the real source of our wealth, a lack of faith in our ability as free individuals and institutions to generate whatever we need and to allow new ideas to unfold and new processes and resources to develop—in short, to continue to explore the unlimited economy that exists in mind. (Brookes 1982, p. 36.)

These insights into the idea of ‘economic reality’ are necessary to help make sense of the practical philosophy of environmental sceptics, in the extent to which they advocate that the best way to maintain and increase our available resources is to use them up, an outlook which is the diametric opposite of the environmentalist concept of ‘sustainability’.

Examples of such advocacy are not hard to find. In one of his few explicit treatments of environmental debate, Hayek (1990 [1960], p. 374) expressed his certainty that ‘unsustainable’ consumption was indeed sustainable, after all, on the basis that consumption was a feature of economic progress, by which new resources would necessarily be found to replace those used up. On this basis he argued against conservationists’ efforts to safeguard any particular mineral reserves or ecosystems: ‘The existence of a particular natural resource merely means that, while it lasts, its temporary contribution to our income will help us to create new ones which will similarly assist us in the future.’ In making this argument, Hayek was remarkably candid about the extent to which this belief—that, by a kind of reverse Say’s Law, consumption always makes its own supplies of natural resources—depends upon a leap of faith:

In a sense, of course, most consumption of irreplaceable resources rests on an act of faith. We are generally confident that, by the time the resource is exhausted, something new will have been discovered which will either satisfy the same need or at least compensate us for what we no longer have, so that we are, on the whole, as well off as before. We are constantly using up resources on the basis of the mere probability that our knowledge of available resources will increase indefinitely—and

this knowledge does increase in part because we are using up what is available at such a fast rate. Indeed, if we are to make full use of the available resources, we must act on the assumption that it will continue to increase [...] (Hayek 1990 [1960], p. 369)

Such sentiments are commonplace within more contemporary environmental debate. Ben-Ami (2012, p. 136) objects to the concern for future generations at the heart of the idea of ‘sustainable development’, since it is not focused on ‘humanity confidently striving to the future. On the contrary, it expresses a fear of uncertainty about what lies ahead’. Huber and Mills (2005) are yet more strident:

[We can] attain the impossible—infinite energy, perpetual motion, and the triumph of power. It will all run out but we will always find more. [...] The faster we extract and burn them, the faster we find still more. [...] Energy supplies are infinite. [...] The more energy we consume, the more we capture. It’s a chain reaction, and it spirals up, not down. It is, if you will, a perpetual motion machine. [...] We] keep getting closer to the receding horizon. [...] The] issue of exhaustion is resolved. Energy supplies are—for all practical purposes—infinite. [...] The single incontrovertible historical fact about energy on Earth is that energy supplies haven’t run down, they have run up. [...] (Huber and Mills 2005, pp. xix, xxix, 3–4, 181, 188)

This same outlook is central to the thought of Julian Simon, as when he writes:

Hence there is no reason to think that consumption in the present is at the expense of future consumers, or that more consumers now imply less for consumers in the future. Rather, it is reasonable to expect that more consumption now implies more resources in the future because of induced discoveries of new ways to supply resources, which eventually leave resources cheaper and more available than if there were less pressure on resources in the present. (Simon 1996b.)

More directly, he summarises (1996, p. 73): ‘The more we use, the better off we become—and there’s no practical limit to improving our lot forever’.

In the context of a discussion of the construction of a new dimension of being, we might view such practical philosophy (i.e., the positive advocacy of ‘unsustainable’ consumption) as being, in simple terms, supported or enabled by the idea of ‘economic reality’. But we may also go further, and speculatively suggest that it reflects something more: the attempt to *create* this new reality, to *convert* the physical world to it. By showing faith in this reality, by pressing society as a whole to act as though it were true, one will be helping to deliver the world up more fully to market forces and hence technological progress.

5.4 Conclusion

We began with a recent episode within environmental debate, in which the awarding of the Nobel Prize for Economics to Paul Romer was celebrated, by both environmental sceptics and ecomodernists, as an intellectual validation of their opposition to the ‘limits thesis’. The operative argument used in this episode concerned the role of ideas in sustaining economic growth—the theme for which Romer is famous. The argument made with reference to Romer’s work was broadly that, as ideas are not themselves physical, neither they nor the economic activity they enable is constrained by physical limits. In addition, a further argument was made that ultimate physical limits, in the shape of the physics of entropy and thermodynamics, do not apply to human civilisation, thanks to the replenishment of energy which the Earth receives from the Sun, which means the world is not bounded. We observed that these ideas were popularised in the 1980s by President Reagan, but that the ideas themselves were being developed at the turn of that decade by environmentally sceptic economists, notably Julian Simon—whose thinking, in turn, was decisively shaped by the ideas of neoliberal economists, most influentially Friedrich von Hayek.

We further observed that, as the recent debate touched off by Romer’s award showed, this set of ideas has become widely cited, attaining the status—for many participants in environmental debate on the growthist side—of economic common sense. In this respect, many participants in contemporary debate might be citing these ideas without a deep appreciation of their origins, or the world-view of those who originally developed them. For this reason I suggested it was appropriate to carry out an ideational analysis of the underlying ontological beliefs about reality exhibited by some of the leading developers or most partisan promoters of these ideas. This would then expose the philosophical hinterland invoked by those who cite such ‘economic common sense’, even unwittingly, whenever they do so.

In this analysis, we observed three central features of belief: first, that the essence of the mental is limitlessness, and that this quality may, through modern economic practice, be progressively transferred to the physical; second, that for this transference to take place requires the market, to connect individual minds together—via the incentive of personal gain, and the information medium of prices—and thereby form a kind of

collective mind; and third, that, by an effective law of history, minds under the discipline of the market will develop ever greater technological advances over time.⁶¹ We saw that these three ideas amount to a fourth: that economic practice is effectively creating a new dimension of being, 'economic reality', in which the physical is infused with the limitless quality of the mental. Within this form of thinking, natural resources are considered indeterminate (given that our usage of them is liable to change in unspecified ways in the future, owing to ongoing technological advance), and in this sense of infinite. Last, we saw how this outlook, which treats the environmental basis of economic activity as infinite, fosters a form of practical philosophy which actively campaigns for the unsustainable consumption of resources, under the belief that this is consonant with the transformative power of market-incentivised ingenuity. In other words, it represents the attempt, in effect, to compel society as a whole to live the reality of 'economic reality'.

⁶¹ Promethean socialists, we observed, differ by rejecting the market; for them, however, information technology and democratic participation will allow such collective human intelligence to be deployed directly and deliberately, to similarly utopian effect (but on an egalitarian basis).

6: Growth against death: an existential reading of growthist discourse as a defence against intimations of mortality

If in Chapter 4 I asked *how* environmental sceptics think we should live, and in Chapter 5 I asked *what* they think the world really looks like, in this chapter I ask *why* they are motivated to advance their arguments in the first place.

In this chapter I make an explicitly existential examination of growthist discourse, looking for the meaning which its advocates attach to their interventions. Why do they resort to such extreme or fanatical forms of argument, and why invest in them such emotional force? My suggestion, drawing on the insights of existential social science (see Chapter 2), is that the animus behind this discourse relates to defending a vision of enduring or eternal human existence, by which its advocates hope to maintain a sense of life's meaningfulness in the face of limitism's connotations of mortality. In particular, here I want to draw on John Carroll's concept of metaphysical sociology, examining the ideas embodied in the cultural products of an age, with a particular focus on 'on the meaning questions that confront all humans, questions [...] death' (2014, p. 562)—an increasingly difficult subject in an increasingly secular age.

In this chapter I examine the engagement of growthism with concerns of mortality and immortality in increasing levels of concrete manifestation. In section 6.1 I examine the associations made within this discourse between economic growth and an idea of the vital force of life itself, centring on the idea of life as an 'endless journey'. In 6.2 I turn to more explicit preoccupations with immortality, whether of the prolongation of individual human lives or that of the collective of humanity. In 6.3 I examine how these concerns appear to be bound up with attempts to argue against the relevance of the physics of entropy for human life, even to the point of speculative arguments which seek to refute the prospect of the ultimate 'heat death' of the Universe. In 6.4 I attempt to bring the preceding themes altogether in a case study on a particular environmental sceptic, the physicist Freeman Dyson. Finally, in 6.5 I conclude, summarising how this material suggests that growthism is, to an important extent, a reaction against the spectre of nihilism. A reading is suggested here in which the limits to growth thesis triggers fears, not

just of individual but of collective mortality, and with it an ultimate sense of the meaninglessness of life.

6.1 The party of life

In a contribution to a collection of essays published by the ecomodernist Breakthrough Institute, science policy scholar Daniel Sarewitz (2011) writes that ‘we are utterly committed for our survival to an unending technological journey’. What does he mean by this? We can unpack it as follows: The ‘we’ refers to humanity as a whole. Humanity’s ‘survival’ is at risk because of the limits to growth: as humanity grows in numbers, consumption of resources, and ability to disrupt the environment through technology, the risks will also grow that we will undermine the environmental basis for human civilisation. Sarewitz’s use of ‘survival’ suggests he sees this as a *mortal* threat: there is a danger we as a species will be wiped out. What will we need to do to avert this danger? For limitist-environmentalists, use of environmental technology may play a part but there will without doubt be a focus on reducing consumption of resources so as to remain within ecological limits. Ecomodernism, meanwhile, is characterised by an ambition to deal with the problem of ecological limits principally through the development of technology, enabling us to continue rather than curtail economic growth. Thus the importance Sarewitz assigns technological development: this is what is needed for our *survival*, and we are ‘utterly committed’ to it—we have put all our eggs in the one technological basket, so to speak. Crucially, Sarewitz sees this not as a one-off challenge, but as something that will need to be repeated *ad infinitum*: this is an ‘unending journey’. It must be framed in this way, because growth is conceived of within this discourse as being unending: this means the technological effort to reduce its impacts and remain within ecological limits must be equally unending. If it did come to an end, Sarewitz implies, then so would we.

On one level Sarewitz’s remarks can be analysed as replying directly to the threat posed by ecological limits: this is being met by asserting a vision in which technology will be used to extend human (collective) life, successively overcoming threats to our continuance into the future. Such arguments will form the focus of the next section. Before then, however, we can also make a more indirect reading of contributions such as

this, focusing less on their explicit arguments than on the linguistic clues which inform us about the picture of the world such explicit arguments are drawn from.

In this case the words ‘unending journey’ are key. These suggest the idea of movement, towards some destination, but going on forever. This kind of sentiment can be found widely within the discourse of environmental scepticism (and, to a somewhat lesser extent, ecomodernism). Ron Arnold, one of the founders of the ‘Wise Use’ anti-environmentalist network, explicitly frames the idea of progress in this way: ‘The glory of the “dominant Western worldview” so scorned by environmental ideologists is its metaphor of progress: the starburst, an insatiable and interminable outreach after a perpetually flying goal’ (Arnold 1996, p. 23). Here this idea of endless movement towards an ever-receding destination is directly contrasted with the world-view of environmentalists. If environmentalism stands against the idea of the ‘endless journey’, this framing implies, it also stands *for* the opposite idea: that this movement must come to a stop.

One interpretation of such language would be to regard the idea of an ‘endless journey’ as carrying associations with the idea of life itself. Exactly what constitutes life is a question that has been debated by philosophers since the time of Aristotle (Lennox 2001). In the twentieth century it was developed anew by both philosophers and scientists (e.g. Schrödinger 1944, Jonas 1982 [1966]; see Gare 2008), and it is still a matter of active debate today. Notwithstanding the multiplicity of approaches to this problem, it is possible to detect a number of common themes. Reviewing over one hundred separate definitions, Trifonov (2011) suggests a minimum definition of life as describing that which reproduces itself and evolves. Of course, one issue with such a definition is that it might be viewed as extending the definition of life beyond living organisms to encompass systems of information which are not themselves alive (Lachman and Walker 2019). To include a more common-sensical idea of living things (i.e. as we would normally encounter them in our daily lives) we should need to add to this minimal definition the idea at least of animation (the central concept in Aristotle’s definition). Together, we might perceive, these definitional properties of animation, self-reproduction, and evolution evoke a range of ideas which help to provide them with meaning in the first place—ideas such as movement, vitality, metabolism, fecundity, creativity, change, and progress. The idea of an ‘endless journey’ fits easily within such a schema: we have here

animation (journeying), self-reproduction (an endless sequence), and evolution (movement towards an ever-receding goal, suggesting ongoing advance).

The suggestion in this analysis is that the discourse of growthism has a certain preoccupation with defending what might be called the principle of life. This suggestion acquires increased resonance when we examine the concept of ‘life’ which at one point Friedrich von Hayek put at the heart of his economic philosophy. Hayek’s influence on growthist discourse (Aligica 2009), and the suggested Hayek-Simon-Reagan axis of growthist argument in the 1980s, has been noted in Chapter 5. In *The Constitution of Liberty* (2011 [1960]) Hayek outlines arguments against environmental regulation which would classify it as an early example of environmental scepticism itself. In this work he rejects calls for the state to limit the use of natural resources so that they remain sustainable: this is misguided, he thinks, both because government bureaucracies are unlikely to know enough about future stocks and levels of resource use to make good decisions about husbanding them, and because any limits on the use of resources may impede the economic progress which he assumes will ultimately lead to their replacement by other resources (Hayek 2011 [1960], pp. 482–97). What makes Hayek’s contributions of particular note within the context of this current discussion lies in the description he gives to his political creed: he belongs, he says, to ‘the party of life, the party that favors free growth and spontaneous evolution’ (Hayek 2011 [1960], p. 530).

More widely in this volume, Hayek bases his political philosophy on a twin rejection of the progressive’s desire to use the state to plan for the future, and the conservative’s desire to use the state to impose limits on the pace of change. In each case he does so in terms of ideas and images that may be associated with the ‘party of life’. In replying to the progressive, Hayek begins from a definition of progress as ‘the cumulative growth of knowledge and power over nature’. Departing from the progressive at this point, he argues that ‘Progress by its very nature cannot be planned’ since it ‘always leads into the unknown’, and because ‘new problems spring up all the time’ which necessarily run beyond the goals visible to us in the present moment. For Hayek, not only does this mean progress cannot be planned but that it is wrong to focus on the outcomes arising from it: the importance of progress is not the particular advances it brings (and how could anyone say for sure if their age is really happier than a previous stage in history?), but the experience of continual ‘striving’, and the ‘process of adaptation and learning’ to continually changing circumstances: ‘It is not the fruits of past success but the living in and

for the future in which human intelligence proves itself. Progress is movement for movement's sake, for it is in the process of learning, and in the effects of having learned something new, that man enjoys the gift of his intelligence' (Hayek 2011, pp. 94-95).

Regarding the distinction he draws between his political philosophy and conservatism, Hayek focuses again on attitudes towards the future. Conservatives, he writes,

are inclined to use the powers of government to prevent change or to limit its rate to whatever appeals to the more timid mind. In looking forward, they lack the faith in the spontaneous forces of adjustment which makes the liberal accept changes without apprehension, even though he does not know how the necessary adaptations will be brought about. It is, indeed, part of the liberal attitude to assume that, especially in the economic field, the self-regulating forces of the market will somehow bring about the required adjustments to new conditions, although no one can foretell how they will do this in a particular instance (Hayek 2011, p. 522).

Regulation and prohibition are thus presented as an inverse form of planning. The effect is the same: to stymie the spontaneous evolution of collective human life.

In these remarks of Hayek ('the party of life'), we find a self-definition of those who oppose environmental regulation—and the very principle of imposing limits on the forces of the market—as the defenders of life itself. As for the qualities which define 'life', these are 'free growth and spontaneous evolution'. These concepts evoke ideas of a movement, whose direction 'no one can foretell' (since it is free, determined only in real time by the 'spontaneous forces of adjustment', and generated by a continuous process in which the 'striving' of individuals encounters 'new problems [which] spring up all the time'). Such a movement will be ongoing (since evolution will always 'adapt' and 'adjust' to 'new conditions' as they arise). These qualities are highly consonant with the idea of an 'endless journey'.

Similar language can be found in a range of environmentally sceptic texts, but one text is so devoted to this theme that it is illuminating to briefly study it in particular. In *The Future and Its Enemies* (1998) Virginia Postrel, then-editor of the neoliberal *Reason* magazine, elaborates an ideological theory explicitly based on Hayek's arguments in *The Constitution of Liberty* (1998, p. 30). Belief in 'free growth and spontaneous evolution' is to be known as 'dynamism': 'Dynamists are the party of life' (1998, p. 26).

Postrel's book consists of a critique of what she calls 'stasists', whom she views as being pessimistic, overly-cautious, and over-fond of planning and regulation. Environmentalists play a key role for her in the promotion of stasist ideology, the limits to growth thesis being a paradigm of stasis. Subscribers to such beliefs she characterises as being the 'enemies of the future', by which she means not only that they are working to prevent a certain vision of the future from coming into being, but that they are opposed to the very idea of the future itself. For her the future is 'open-ended': it is 'a future that no [one...] can control or predict, a future too diverse and fluid for critics to comprehend' (1998, p. 4). Environmentalists, with their 'green arguments against the open-ended future' (1998, p. 11), are acting against the creative possibilities of life—a very 'a kaleidoscope of trial-and-error innovation' (1998, p. 19). Postrel quotes the economist Paul Romer to the effect that: 'The naïve intuition that people have about limits to growth is profoundly wrong. There is a scarcity of physical objects, but that's not the constraint on what we can do.' Her gloss on this is that: 'The real constraint is not the number of objects but the ways of combining objects or ideas—a number of possibilities that makes the number of atoms in the universe look close to zero by comparison' (Postrel 1998, p. 64). Further on this theme she quotes the futurologist Herbert Simon as remarking: 'Vannevar Bush wrote of science as an "endless frontier." It can be endless, as can be the process of design and the evolution of human society, because there is no limit on diversity in the world. By combinatorics on a few primitive elements, unbounded variety can be created' (Postrel 1998, p. 65). The limits to growth thesis is thus presented as necessarily fallacious, since endless combinations can be produced from a finite stock of resources, in turn meaning that human society can be endless.

Postrel's idea of the future is of a reality which does not exist yet and so cannot be known. The future is made by us but not by any one of us alone, and in that sense none of us can second-guess how it will turn out. It is our 'curiosity, problem solving, and play [...] that make the future unknown, and unknowable' (1998, p. 218). In the manifold diversity (one of her favourite words) of its makers, and in its lack of concrete reality given that it always lies beyond the present, Postrel sees the future as being unbounded. In practice, she appears to equate this with its being indeterminate—which is to say, not finite. She accepts and approves (adding her own emphasis) of Christopher Lasch's characterisation of the idea of progress as 'not the promise of a secular utopia that would bring history to a happy ending but *the promise of steady improvement with no*

foreseeable ending at all (Postrel 1998, p. 58). Postrel equally takes ownership of the Southern Agrarian critique of industrial progress, writing ‘the future is indeed an “infinite series,” just as the Agrarians charged’, before defining this as being ‘an open-ended progression of invention, learning, adaptation, and change’ (1998, p. 59). Deploying similar language regarding non-finitude, she counters environmentalists’ arguments against GM crops by stating: ‘Our artifice alters the path of nature, but it does not end it, for nature has no stopping point, no final shape. It is a process, not an end’ (1998, p. 152). It is because of this inexhaustibility that environmentalists are wrong to worry about the future: ‘there is no abyss to cross’ (1998, p. 218). This is why dynamists are ‘The party of life’, ‘the party that fears no “abyss” in the unfolding future’ (1998, p. 215).

In all this Postrel views the future as being replete with the inexhaustible potential of life itself: ‘the future is not a single, uniform state but an ongoing process that reflects the plenitude of human life’ (Postrel 1998, p. xiv). Life itself, for Postrel, is ‘fluidity, variety, competition, adaptation, learning, improvement, evolution, and spontaneously emerging order’ (1998, p. 28). In accepting the unknowability of the future, and seeking to adapt to it as it unfolds itself, dynamists are presented as those who make themselves at one with this creative spirit of life, and do most to promote this same experience in others. A world shaped by dynamists will be fizzing with energy, ‘not a place of hedonistic lotus eaters but of continual striving [...] to improve’ (1998, p. 33). In that dynamism is at one with the spirit of life then more dynamism must result in more life. Thus ‘life in a dynamist society tomorrow will be better, on the whole, than life today. It will offer more variety, more opportunity, more options, more knowledge, more control over time and place, more life’ (1998, p. 58).

Postrel’s treatise on dynamism may be a particularly pure distillation of a sentiment which regards opposition to environmental limits (or to a pessimistic resignation as to their inescapability) as a defence of life itself. It is not unrepresentative, however: within growthist discourse one repeatedly encounters positive references to the ‘endless’, ‘indefinite’, and ‘unlimited’ qualities of growth, ingenuity, or the future itself.

Such use of language extends beyond those who follow Hayekian political philosophy. In *Austerity Ecology and the Collapse Porn Addicts* the socialist Leigh Phillips seeks to recover ‘a deeply humanist confidence in the capacity of our species to improve upon “natural” processes, to repeatedly breach the barriers placed in our way by

the rest of nature’ (Phillips 2015, p. 227). In this he takes his cue in part from Engels’ argument against Malthusianism: fears that overpopulation would lead to environmental exhaustion were baseless since they did not take account of ‘science—whose progress is as unlimited and at least as rapid as that of population’ (Engels, in Phillips 2015, p. 57). For Phillips (2015, p. 62), ‘The socialist says: Through rational, democratic planning, let’s make sure that the innovation arrives so that we can move forward [...] And move forward we must, in order to continue to expand human flourishing. So long as we do that, there are in principle no limits.’ We must keep moving forward, that is, for the sake of humanity. In fact, more than this, we must do this for the sake of life itself—for if intelligent life were rare in the universe it would

require that we continue to grow economically so that we can, for example, build and maintain effective near-Earth asteroid deflection systems to protect the Earth; spread throughout the galaxy so as to assure the continued existence in the life-vitiating event of a local supernova; and ultimately advance to a level of technology and understanding of reality that perhaps we can figure out a way to permit intelligence to escape the heat death of the universe (Phillips 2015, p. 261).⁶²

The spirit of Phillips’ book is summed up well in the example he makes of the Cosmists, a nineteenth century school of Russian radicals: ‘Prefiguring today’s “transhumanists”, Cosmists also believed that one day, science and medicine would deliver radical life extension and effective immortality.’ He approvingly quotes a recent observation that the Cosmists sought to ‘Storm the heavens and conquer death’, before concluding (emphasis his): ‘Today, we can extend such lofty but *specific* goals to a more generalised *principle of audacity*: that we must never stop reaching, never stop *progressing*’ (Phillips 2015, p. 259).

Here we can see that the ‘endless journey’ may be invoked by both the left and the right: over and above their political ideals, each is fundamentally defending a notion of life itself. Perhaps the most vivid illustration of this concern is given by a notorious television advert run in 2006 by an environmental sceptic think tank. Attacking environmentalists’ proposals to cut carbon emissions, it concluded: ‘CO₂: They call it pollution. We call it life’ (Competitive Enterprise Institute 2006).

⁶² As a reflection of his concern for the principle of the ongoing survival of consciousness into the deep future, Phillips’ (2019) response to a question posed on this—‘Does the thought of the ultimate death of the universe in some 15 billion years or so bother you?’—was: ‘Yes, very much.’

6.2 The pursuit of immortality

Phillips' remarks about the need for continual progress so as to defend intelligent life from the dangers of asteroids, supernovae, and ultimately the death throes of the Universe point us towards recognition of a more concrete grappling with mortality—and the need to overcome it—within the discourses of environmental scepticism and ecomodernism.

Death is, we might say, the original and ultimate natural limit. From the days of the scientific revolution onwards, moderns have speculated on the possibility that technological advance would enable us to extend life or possibly cancel death altogether. Bacon looked forward to a new science of medicine in which physicians would apply scientific method to the 'lengthening the thread of life itself' (Gruman 2003, p. 141). Descartes hoped that through taking a scientific approach to health it might be possible to extend the human lifespan to several hundred years (matching the Biblical patriarchs)—even forever (Haycock 2008, p. 176). Such hopes matured into a feature of Enlightenment thought—Franklyn writing to Priestly that in the future, 'all diseases may by sure means be prevented or cured, not excepting even that of old age, and our lives lengthened at pleasure even beyond the antediluvian standard' (Gruman 2003, p. 129).

In a celebrated passage Condorcet speculated that, thanks to the progress of reason, the day might 'arrive when death will be nothing more than the effect either of extraordinary accidents, or of the slow and gradual decay of the vital powers; and that the duration of the middle space, of the interval between the birth of man and this decay, will itself have no assignable limit' (Condorcet 1795, p. 368). While he ruled out literal immortality, Condorcet argued that the human lifespan might be extended 'indefinitely'. Taking care to explain what 'indefinitely' meant in this context, he spelt out (1795, pp. 369–70) that 'we cannot tell what is the bound which the duration of human life can never exceed; we cannot even tell, whether there be any circumstance in the laws of nature which has determined and laid down its limit'. Absent concrete information on a maximum possible lifespan, in other words, 'indefinite' should be treated in practice as equating to 'infinite': thus 'we are bound to believe that the mean duration of human life will for ever increase'.

While speculations such as these have the quality of science fiction, by the second half of the nineteenth century advances in medicine and growth of international trade in agriculture began to translate fiction into fact: average life expectancy in the United Kingdom rose from an estimated 38 in 1703 to 81 in 2013 (Roser *et al.* 2013). For all these advances, death has remained an inescapable reality; and extending lives has led to more people suffering from and dying, directly or indirectly, of cancer, heart disease, stroke, diabetes, Alzheimer's, or simply old age (Friend 2017). The modern speculative interest in the future capacity of medical science to 'lengthen the thread of life' indefinitely—or even conquer death altogether—has thus not evaporated in the face of its accomplished successes. It can still be found in feverish interest in research on ways to halt or reverse the ageing process (Friend 2017); prophetic talk about the imminent coming of the Singularity—a state in which humans will merge with information technology, continuously upgrading their bodies or uploading their minds onto a computer server (Kurzweil 2006); and a fascination (at least, in the 1960s and 70s) with cryonics, the hopeful practice of freezing someone's body (or head) after death, in the belief that it will be defrosted and reanimated some time in the future, once scientific advances make that possible (Lepore 2010).

This strand of thought intersects with environmental scepticism when the focus shifts from the survival of individuals to that of the society or civilisation within which they are to live. As John Gray points out, cryonics depends on the sheer hope that future technological advances will make it possible to bring the dead back to life: even if such a miracle were to happen, it might take centuries, during which time the companies storing the cadavers could go under in a stock market crash, or be swept away by war or revolution (Gray 2004, p. 67). More pointedly, that future society must as a whole have avoided succumbing to ecological collapse. This applies beyond cryonics: for those hoping their lives can be extended indefinitely, whether physically or in virtual reality, a future collapse in civilisation would mean an end to their very own lives. Even when one's visions of the future consist in a more conventional hope for the happiness of successive generations (as in the visions of Postrel and Phillips), the prospect of ecological crisis reversing that upward train of material progress would undo the ability of those visions to inspire in the present.

Where these currents of thought converge most of all is in speculation as to our future abilities to escape the physical limits of our planet—or ultimately the Universe. In

1974 the physicist Gerard O'Neill outlined a much-cited scheme for housing colonies in giant space stations in orbit around the Earth; in part this was written in response to the warnings as to planetary overshoot in *The Limits to Growth* report (Bardi 2011). In the same year the environmental sceptic Adrian Berry wrote a book which declared, 'Contrary to the Club of Rome's belief, there are no "limits to growth". There is no reason why our global wealth [...] should not continue to grow at its present annual average of 3 to 5 percent indefinitely' (Berry 1974, p. 53). To support such growth beyond the limits of our own planet, Berry forecast that we would colonise Venus, disassemble Jupiter and recycle its useful resources, and ultimately travel to other solar systems. This would have to happen if human life were to survive into the far future, and therefore it will: 'Starships will be [...] a necessity of life. [...] The] choice will be simple: migrate or perish' (Berry 2000, p. 242). In the 1960s the populariser of cryonics, Robert Ettinger, had also addressed the issue of overshoot—in this case arising from his speculative consideration that the population of frozen corpses might reach 40 billion before science had advanced enough to reanimate them. If this population did prove too much for the Earth to support, we could

honeycomb the earth to a great depth, multiplying the usable surface. We could colonize other planets and satellites of the solar system, if appropriate at a certain stage in history. Beyond that, [...] we can simply use the mass of other planets, and even mass from the sun, actually to create thousands of new planets just like earth! [...] Beyond that still, if we choose to breed fast enough and long enough to make it necessary, we can go to the stars (Ettinger 1965, pp. 117–18).

Nor are such speculations an historical relic of the initial 'limits to growth debate' of the 1970s. Establishing bases on the Moon, colonies on Mars, and mining outposts on asteroids have been an increasing feature of environmental debate in the twenty-first century, from both Silicon Valley capitalists and technophile socialists alike (Piper 2018, Solon 2018, Bastani 2019, Bort 2019, Taylor 2019). To help with the physical challenges of living in space or on other planets some have suggested that research being pursued in manipulating genes to extend individuals' lives may be of assistance:

we can enable human transformations that would rival Marvel Comics. Super muscularity, ultra-endurance, super radiation-resistance. You could have people living on the moons of Jupiter who'd be modified in this way, and they could physically harvest energy from the gamma rays they were exposed to (Friend 2017).

On a similar theme the biologist Stanley Shostak has suggested that a combination of cloning and stem-cell therapy might enable us to prevent a select number of children from ever ageing, thereby making them immortals. This, he believes, will not just enable those individuals to live forever but also help to extend the lifespan of the human race: assuming the Earth has a limited capacity to support human life, he suggests humanity will need to escape it at some point to make an interstellar transit to new solar systems. As such journeys may take centuries, he supposes the colonists will be cryogenically frozen; but their vessels will require crew, and his prepubescent immortals would be ideal for this role, he believes. Making some of us immortal is thus a necessity if we want humanity as a whole to survive: 'Here then is the choice for humanity: Become immortal or accept the inevitable end of humanity. My preference is to make the effort to create immortal human beings in time to move a sizeable part of humanity to safe ground' (Shostak 2002, p. 4).

6.3 The debate over the relevance of entropy to human life

Beyond the rather obvious idea of evading planetary limits by escaping the planet itself, where the concern for preserving human life (individually or in toto) has most centrally intersected with environmental debate has been in relation to the physics of entropy. As represented in the second law of thermodynamics, the physics of entropy state that any form of work will progressively use up the available energy within a closed system, leading to an irreversible increase in entropy (a measure of disorder, or lack of potential for further work). This concept was placed at the heart of ecological economics, notably by Nicholas Georgescu-Roegen, for whom it underwrites the world-view of environmentalism: beyond individual concerns as to the effects of pollution or unsustainable use of resources, the physics of entropy tell us that global resources are inescapably scarce and that all forms of resource use are ultimately unsustainable. As he puts it: 'We must continuously bear in mind that [...] our accessible environment is like an hourglass which cannot, however, be turned upside down and in which the useful matter-energy from the upper half turns irrevocably into waste as it continuously pours down into the lower half' (Georgescu-Roegen 1976, p. xvi).

This argument has provoked heated opposition from environmental sceptics and ecomodernists since the early 1970s, and (as featured in the discussion of 'The story of

eternal growth' in Chapter 5) is still a live feature of environmental debate—not least as reflected by Liebreich (2018), in attacking environmentalists' use of the entropy concept as 'fake science'. Possibly its most focused critique has come from the environmental sceptic Julian Simon (1996).⁶³ Simon understands the entropy argument to be a matter of life and death for humanity as a whole: 'The doomsdayers extrapolate from this simple idea the belief that the more fuel that humans use in current decades, the sooner our species must come to an end or lack of energy to maintain a patterned existence' (1996, p. 78). He marshals two principal arguments in response: first, the depiction given by the second law of thermodynamics, of systems running down towards total disorder, does not correspond to the human experience of civilised progress; second, that this may be explained by the fact that the Earth is not a 'closed system', in that it receives a continual influx of energy from the Sun. Thus his conclusion: 'The concept of entropy simply doesn't matter for human well-being. Our earthly island of order can grow indefinitely within the universal sea of chaos' (1996, p. 81). The dependence of this argument on solar energy does involve Simon in concerns as to the ultimate fate of the Sun, which he accepts is destined to engulf the Earth in several billion years' time; however, he treats this as in practice so far in the future as not to matter—and also holds out the prospect of escaping 'to other planets, other galaxies, etc. incorporating an increasing portion of the universe's matter and energy' (1996, p. 81).

Even this, leaves Simon with the problem of the fate which the second law of thermodynamics is said to imply for the cosmos as a whole: an inescapable increase towards maximum entropy, resulting in what was once popularly known as the 'heat death of the Universe'. Here Simon refers to 'a solid body of reasoning by physicists' which counters environmentalists' 'arguments from physics that human existence is finite' (1996, p. 81), including the suggestion in Frank Tipler's *The Physics of Immortality* (1994) that it would be theoretically possible for humanity to outlive even the end of the Universe. This enables him to quote Tipler as declaring: 'The laws of physics do not forbid perpetual economic growth' (in Simon 1996, p. 64).

⁶³ Simon's arguments typify much environmentally sceptical thought on this topic. A contrasting view is offered by the arguments of the crank theorist Lyndon LaRouche and his followers, who suggest that the mental powers of a few exceptional geniuses are able directly to reverse the effects of entropy. Thus: 'We will colonize planets and someday even new galaxies' for 'Real growth has, in fact, no limits' (Schauerhammer 2002).

Tipler himself is clear that:

If the limits-to-growth people are correct in their basic premise—that resources are finite—then we and the rest of the biosphere are finished. Period. It's a matter of elementary-school mathematics: if you have a finite amount of anything, and you use them at a constant rate, then you use them all in a finite amount of time. Suppose, for example, we have 1000 units of resources. If we use them at a constant rate of 1 unit per year, then we have zero resources in 1000 years. We're dead in 1000 years. In the Club of Rome computer simulations made to show the 'advantages' of a constant sized human population, a finite amount of resources was assumed, and the resources ran out—the human race dropped dead—within 500 years of the present, no matter what we did. A stable human population merely delayed the inevitable. Finite resources means finite amount of survival time (Tipler 1998, p. 4).

If this prospect were not bad enough, Tipler objects that 'Such perceived limits now form the ideological basis for government oversight of the economy' (1998, p. 2). But against such arguments, he stresses that 'the laws of physics as we currently understand them will permit exponential economic growth to continue forever!', meaning the 'wealth of society can grow to become literally infinite at the end of time' (1998, p. 2).

In order to enjoy this salvation Tipler outlines the following plan: first, we must destroy the Earth, so that 'its material can be used to construct O'Neill colonies where life can continue' in space; second, send 'von Neumann' machines to other solar systems, to terraform planets so they are ready for us to colonise, and to synthesise humans to colonise them;⁶⁴ third, turn ourselves into purely virtual information; fourth, seed the entire cosmos with our disembodied intelligence; before, five, consciously redirecting the ultimate gravitational collapse of the Universe, thereby creating the 'Omega Point'—an eternal hereafter in which humanity, and our infinitely evolving successor species, enjoy the riches of paradise.

This vision is framed by Hayekian economics, Tipler explains: 'The key idea one needs to show that exponential growth can continue literally forever is provided by the great Nobel-prize winning economist Friedrich Hayek, who showed many years ago that [...] the wealth possessed by an individual or the wealth possessed by the society is

⁶⁴ Ettinger (1965, p. 113) had earlier painted a picture of a future in which such wondrous 'von Neumann' machines would also be found on a more domestic scale: each family's machine 'will scoop up earth, or air, or water, and spew forth whatever is desired in any required amounts—whether caviar, gold bricks, hernia operations, psychiatric advice, impressionist paintings, space ships, or pastel mink toilet rolls. It will keep itself in repair, and in fact continuously improve itself, and will build others like itself whenever required by an increase in the owner's family.'

proportional to the number of opportunities it has to the number of different alternative actions he, she or it has available'. Since in eternity we will have infinite time to enjoy an infinite amount of opportunities, 'this means that wealth increases exponentially forever' (Tipler 1998, pp. 13-14). And if wealth really is to become infinite, then it must grant us infinite power; if there remained some things money could not buy, then by definition we could not be infinitely rich. Fortunately, 'This exponentially increasing wealth allows life in the far future the power to resurrect us all' (Tipler 1998, p. 14). And if our resurrected self did not want to spend eternity with our resurrected partner, Tipler believes we will be able to order someone better—better, in fact, than anyone who ever lived. If we are infinitely wealthy we should be able to demand the most attractive partner it is mathematically possible to be. Not that simply catching sight of an infinitely alluring sexual partner would not bring its own challenges:

[The] psychological impact on a man of meeting the woman who is to him the most beautiful woman in the world is roughly nine times the impact of meeting any woman in the top 10 per cent, since there are roughly one billion women in the world ($[\log_{10}10^9]/[\log_{10}10]=9$). To compute a lower bound on the psychological impact of meeting the most beautiful woman whose existence is logically possible, let us suppose that beauty is entirely genetic. I pointed out above that there are about 10^{106} genetically distinct possible women. Assuming the validity of the Fechner-Weber Law at large stimulus, the relative psychological impact of meeting the most beautiful of these is thus $[\log_{10}10^{106}]/[\log_{10}10^9]=100,000$ times the impact of meeting the most beautiful woman in the world. Including personality in addition to surface appearance makes the impact even greater, but even without this inclusion the impact is already greater than the human nervous system can stand. (The resurrection body could be modified to stand it.) (Tipler 1994, pp. 256-7)

In discussing the driving force behind his speculations Tipler has referred to the 'great American philosopher Woody Allen, who said, "I don't want to live forever through my works. I want to live forever by not dying." I think that carries the emotional impact that the possibility of computer resurrection is beginning to mean to me' (in Horgan 1996, p. 257).

6.4 'Infinite In All Directions': the environmental scepticism of Freeman Dyson

Tipler is not the only scientist Julian Simon is referring to when writing of 'a solid body of reasoning by physicists' that counters environmentalists' 'arguments from physics that human existence is finite'. The other is Freeman Dyson. Dyson is worth devoting a brief

case study to, since in addition to advancing the case for humanity to outrun the limits of nature by escaping the Earth (and ultimately living beyond the ‘heat death of the Universe’), he has himself been a prominent rhetor of environmental scepticism. The link between environmental scepticism and a preoccupation with human immortality is central in his case. A further justification for focusing on Dyson is his eminence as a scientist (Royal Society 2019), which bolsters the case for attending to what he himself describes as ‘heretical’ views (Dyson 2006).

Despite Dyson’s scientific credentials, he has not intervened in climate change debate as a climate scientist. Rather than claiming to be an expert in this field, he states that he has not given much time to the issue and does not pretend to know the real answers; where he has been certain is simply that global-warming experts do not know the answers, either (Brower 2010). His positive arguments are drawn from a familiar stock of environmentally sceptic tropes: climate models are highly uncertain; cutting emissions would be more expensive than the problem it is meant to address; people in Greenland are *happy* the glaciers are melting; global warming will ensure fewer people die of cold; carbon-intensive industrialisation is reducing poverty in China and India; increased CO₂ in the atmosphere is a good thing, accelerating the growth of vegetation (‘enormously beneficial both to food production and also to biodiversity, preservation of species and everything else that’s good’); global warming is a misnomer (it’s not warming everywhere); global temperature rises are difficult to measure accurately; it might be the Sun; it might be something to do with cosmic rays (Dyson 2009, 2015, Brower 2010, Connor 2011).

Dyson’s environmental scepticism poses an interesting question for his interpreters: crudely phrased, ‘how could someone as smart as Freeman Dyson be so dumb?’ (Brower 2010). Here it may yield some insights to attend to how he writes about the existential threat posed by environmental and other natural limits, including the finitude of mortal life.. When we do perform such an attentive reading, we find the repeated presence of such themes as ‘space’, ‘the open frontier’, ‘destiny’, ‘future’, ‘colonisation’, ‘survival’, ‘struggle’, ‘maximum diversity’, ‘adaptability’, ‘meaning’, ‘invulnerable’, ‘infinite’, ‘Mind’, and ‘God’. What we find, indeed, is a depiction of an ‘endless journey’—and one in which, at the end of time (much as with Tipler), mankind becomes pure intelligence and assumes conscious control over the entire cosmos.

In an article written at the turn of the 1970s—and hence during the first flush of the contemporary environmental movement—Dyson endorses the embryonic limits to growth thesis, but suggests a way around it. By escaping our own biosphere we would be able to clean up the environment and still retain ongoing growth:

If humanity were to be forever confined to Earth, the problem of pollution could hardly be solved without an enforced economic stagnation. Many industrial processes are inherently messy, and the sum-total of industrial processes threatens to heat the Earth's biosphere to an intolerable extent within a century or two at present rates of economic growth. If cheap space transportation were available, it would become socially desirable and probably economically advantageous to move many of the messier industries into space. The solar wind is a magnificent garbage-disposal system, sweeping any dispersed matter in the solar system into the outer darkness where it will never be seen again (Dyson 1969, p. 455).

In the same article Dyson moves quickly from addressing the question of environmental limits to that of the ultimate limits to human life. Here his focus is on nuclear weapons and the aggressive relationships of rival ethnic and social groups. He frames this issue as ‘the problem of invulnerability’, and space again provides the answer:

The emigration into distant parts of the solar system of a substantial number of people would make our species as a whole invulnerable. A nuclear holocaust on Earth would still be an unspeakable tragedy, and might still wipe out 99 per cent of our numbers. But the one per cent who had dispersed themselves could not be wiped out simultaneously by any man-made catastrophe, and they would remain to carry on the promise of our destiny (1969, p. 455).

Dyson frames the idea of space colonisation not just as a matter of preservation but—even more important—of a kind of recovery of the human spirit: ‘The third and to my mind deepest benefit which space offers to mankind is the recovery of an open frontier.’ Colonies spread out among ‘10 billion comets [...] on the outer fringes of the solar system’ will provide ‘an open frontier, a place to hide and to disappear without trace, beyond the reach of snooping policemen and bureaucrats’ (1969, p. 455).

The remarks in this article from 1969 were not just a product of their time, later to be regarded as a curio. In a book written three decades later, Dyson (1997) similarly concedes the terms of the limits to growth thesis, but again only to subvert it. ‘The size of our population, the size of our economic resources, the size of our living space, all are growing at an average rate of about two percent per year,’ he observes, before concluding: ‘So far as the population on the earth is concerned, this two-percent growth must soon

come to an end' (Dyson 1997, p. 156). Within the context of environmental sceptic discourse this is a remarkable concession: growth must soon be ended by environmental limits. He again offers space as the solution:

But when life and industrial activities are spread out over the solar system, there is no compelling reason for growth to stop. It could happen that the growth will continue at a rate of two percent a year for a thousand years. Then, at the end of a thousand years, our population and resources and living space will have grown by a factor of five hundred million. There will still be ample reserves of sunlight and water and other essential materials available in the solar system to support a population of this size. (Dyson 1997, p. 156.)

When we have grown too large even for the solar system to support us, there's the rest of the galaxy. And beyond that, other galaxies. And when even these limits have been reached, that still need not curtail growth: 'although the resources of matter and energy available in each galaxy would be finite, the laws of physics and information theory allow life to survive forever using a finite store of energy' (Dyson 1997, p. 171).

In a book entitled *Infinite In All Directions* (1988) Dyson outlines a blueprint for how humanity—or what we must eventually evolve into—could survive forever, even after all the stars have gone out and the Universe tends towards maximum entropy. First, we must use genetic engineering as a means of 'redesigning terrestrial creatures so as to make them viable in space or on celestial bodies'. After that we can rely on evolution to perfect the job: 'The mistakes which we shall inevitably make in our initial plantings will in time be rectified as their offspring diversify and spread through the cosmos' (1988, p. 104).' Between them, our initial genetic engineering and the subsequent process of evolution will have to ensure that our descendant species can 'live and be happy in zero-g, zero-T, and zero-P, that is to say, zero-gravity, zero-temperature, and zero-pressure' (1988, pp. 104-5). After that our descendants will need to give up their physical bodies and translate themselves into information; Dyson suggests each of us can be represented by a number, Q , which for a human being 'turns out to be about 10^{23} , which is a rough measure of the amount of waste heat we have to generate in order to do anything at all'. He is confident that this can be achieved, having assumed 'The hypothesis of adaptability [which] says that, given sufficient time, life can adapt itself to any environment whatsoever' (1988, pp. 107-8). Finally, Dyson considers the far future, when all matter will finally decay into radiation. Even this, he thinks, can be survived:

life will have to face some severe problems about 10^{33} years from now [...] This will be the supreme test of life's adaptability. I do not know whether we can survive without protons. But I do not see any reason even then to declare the situation hopeless. If the assumptions of abstraction and adaptability are correct, the patterns of life and consciousness should be transferrable without loss from one medium to another. After the protons are gone, we shall still have electrons and positrons and photons, and immaterial plasma may do as well as flesh and blood as a vehicle for the patterns of our thought. Perhaps the best possible universe is a universe of constant challenges, a universe in which survival is possible but not too easy. If optimism is the philosophy of people who welcome challenges, then we have plenty of reason to be optimists (Dyson 1988, pp. 111–12).

Dyson's reference to 'optimism' here is significant; repeatedly he identifies as our real problem, not material limits—since with the right spirit and application these may be overcome—but pessimism and apathy, which lead to the acceptance of limits as being insuperable. He attributes the difference between his views on climate change and those of mainstream climate scientists to the fact that: 'I'm an optimist [...] Everything I look at has improved compared to the 1930s'. More generally he sees 'This sort of mood of doom and gloom' as being the speciality of 'the academic communities, particularly in the western societies' (Dyson 2015)—in part, this being a sullen response of the 'academic middle class' to the political triumph of the 'commercial middle class' (Dyson 2014). He is pleased to observe that neither the fast-developing economies of Asia, nor the general public in wealthy countries, share such pessimism (Dyson 2015).

Countering the spirit of apathy and resignation in the face of the challenges to human survival (at least among Western intellectuals) is something of a mission for him: 'We are all to some extent affected by this paralysis of the will, this atrophy of the moral sense. We shrug off with silly excuses our burden of responsibility for the impending tragedy. We behave like the characters in a Samuel Beckett play, sitting helplessly in our dustbins while the endgame of history is played out' (Dyson 1982, p. 126). He likens the pessimistic mentality of the privileged classes of the late twentieth century to the character of Eeyore, quoting a representative passage from *Winnie the Pooh*:

Eeyore, the old grey Donkey, stood by the side of the stream, and looked at himself in the water.

'Pathetic,' he said. 'That's what it is. Pathetic.' He turned and walked slowly down the stream for twenty yards, splashed across it, and walked slowly back on the other side. Then he looked at himself in the water again.

‘As I thought,’ he said. ‘No better from this side. But nobody minds. Nobody cares. Pathetic, that’s what it is.’ (In Dyson 1982, p. 143)

Dyson comments on this: ‘The Eeyore syndrome is somewhere deep in the heart of each one of us, ready to take over if we give it a chance. Anyone who has to deal with mentally sick people will be familiar with the voice of Eeyore’ (1982, p. 143).

In contrast Dyson seeks a ‘restoration of a sense of meaning to the modern world’ (1982, p. 126)—and, we may discern, a pride in the human race. We can recover this meaning by remembering the fundamental purpose of human life: ‘Survival is our business’ (1982, p. 143). Recalling the myth of Odysseus, he suggests that the meaning of life is the struggle to survive, to overcome a series of challenges and to make it back home. But this itself can only have any meaning if we are prepared to voyage out once more to experience further adventures:

Homecoming is the reward for survival, but it is not the end of the story. There is no end, because homecoming means a new beginning. Homecoming means renewal and rebirth, a new generation growing up with new hopes and new ideals. Their achievements will redeem our failures; their survival will give meaning to our bewilderment. (Dyson 1982, p. 144.)

Elsewhere on this theme he says: ‘Humanity cannot live forever with clipped wings’ (Dyson 1997, p. 208).

Dyson is preoccupied with the human essence. He appears to think that we (academic elites, at least) have lost sight of our essential selves. What is man? For Dyson, we are that part of nature which has become conscious, and which now personifies the whole: ‘The humanist ethic begins with the belief that humans are an essential part of nature. Through human minds the biosphere has acquired the capacity to steer its own evolution, and now we are in charge’ (Dyson 2009). The way he describes it, our minds partake of a single natural or cosmic substance: ‘Mind, through the long course of biological evolution, has established itself as a moving force in our little corner of the universe. Here on this small planet, mind has infiltrated matter and has taken control’ (Dyson 1988, p. 118). Our role is to apply our ingenuity in order that ‘mind’ might advance and spread its presence throughout the cosmos, until in us the Universe begins to assert conscious control over itself. Dyson speculates: ‘A million years from now, our descendants and their neighbors in other galaxies will perhaps be preparing for the intelligent intervention of life in the evolution of the universe as a whole’. In the

future we will be able to ‘cooperate with your neighbors in large-scale engineering projects to keep the universe trim and maintain the optimum conditions for life’ (Dyson 1997, pp. 167, 172).

This process in which the physical comes under the sway of the mental is presented as the narrative of the Universe:

It appears to me that the tendency of mind to infiltrate and control matter is a law of nature. Individual minds die and individual planets may be destroyed. [...] The infiltration of mind into the universe will not be permanently halted by any catastrophe or by any barrier that I can imagine. If our species does not choose to lead the way, others will do so, or may have already done so. If our species is extinguished, others will be wiser or luckier. Mind is patient. Mind has waited for 3 billion years on this planet before composing its first string quartet. It may have to wait for another 3 billion years before it spreads all over the galaxy. I do not expect that it will have to wait so long. But if necessary, it will wait. The universe is like a fertile soil spread out all around us, ready for the seeds of mind to sprout and grow. Ultimately, late or soon, mind will come into its heritage (Dyson 1988, p. 118).

And as the story completes itself, and ‘Mind’ assumes complete control over nature, what will be the result? ‘I do not make any clear distinction between mind and God. God is what mind becomes when it has passed beyond the scale of our comprehension’ (Dyson 1988, p. 119). Even today, we humans, in our capacity as mental beings, are God-in-embryo: ‘We are the chief inlets of God on this planet at the present stage of his development. We may later grow with him as he grows, or we may be left behind. [...] If we are left behind, it is an end. If we keep growing, it is a beginning’ (1988, p. 119). Growth is presented as the way to eternal life: ‘To this process of growth and diversification I see no end’ (1988, p. 298).

6.5 Conclusion

In this chapter I have carried out a certain reading of the discourse of environmental scepticism. I began with reference to a general theory of human motivations sketched out in Chapter 2: drawn from existential social science, and more specifically Carrollian metaphysical sociology, this suggests that the central preoccupation of human beings is with gaining a sense of meaning, pre-eminently an overarching sense of meaningfulness of our individual, mortal lives—and that this becomes particularly problematic in an

increasingly secular age. The reading I made of growthist discourse was then based on an identification of its preoccupation with asserting the possibility of life's extending beyond natural limits. Using this as a guiding interpretation I analysed examples from within this discourse of texts which associated the pursuit of economic growth with the ongoing presence of life itself. This presentation was carried out with regard to four, successively more concrete, levels of manifestation: first, the texts reviewed focused on a more abstract principle of life; second, the texts focused more concretely on the idea of prolonging human life, either individually or collectively; third, the focus was on how these ideas have been mobilised within environmental debate to argue against the relevance of the physics of entropy to human life; and last, the focus was narrowed to texts produced by a single author, Freeman Dyson, shown to illustrate many of the themes discussed in the preceding sections.

This analysis has revealed this much: Growth is commonly depicted within this discourse in terms associated with a concept of life itself—suggesting that the limits to growth are perceived within this discourse as being associated with death. From the beginnings of the limits to growth debate there has been an interest, among those who decry the limits thesis as ‘doomsaying’, in asserting the possibility of escaping the limits of planet Earth, even of the Universe. The possibility of a future of technological advances, which may continue *ad infinitum* to ensure the overcoming of physical limits, is often regarded from within this discourse as an eternal law. The association of growth with a continuous overcoming of limits, stretching into the future as far as the eye can see, suggests, by inversion, that the limits to growth are perceived as representing a final and fatal stop. Viewed in this way, natural limits do not represent death in the ordinary sense, the death of individuals. Instead, they represent a stop to progress—the ‘insatiable and interminable outreach after a perpetually flying goal’. From within a modern, secular age, a stop to progress represents an end to the ‘endless journey’; and what would this signify but collective death, the principle of death, a death that cannot be outrun nor transcended?

The value of the reading presented in this chapter is not only to be measured on its own terms, but by what it enables, in the way of subsequent analysis which places this reading in yet wider contexts. It is here that the predominantly social science aspect of this thesis gives way to its more explicitly philosophical-anthropological content. The following chapter attempts, in the light of the analysis presented in this, to explore such a

new avenue through which to understand the meaning of growthism in the context of what it means for a secular understanding of reality.

7: Growthism and the modern theodicy

We have now arrived at the point where, over the course of this and the succeeding chapter, this thesis transitions to becoming explicitly a work of philosophical anthropology. The analytical material generated over the preceding four chapters will now be subjected to a reading which interprets their significance within a philosophical-anthropological theory on mankind's defining self-understanding within modernity.

What will this mean in practice? To begin to answer this we need to return to John Dryzek's analysis from the beginning of Chapter 3, which was held out as providing a useful starting point for the work that would be carried out in the rest of the thesis. Dryzek (2013) describes an overarching discourse, dubbed 'Prometheanism', which celebrates the technological domination of nature. In Dryzek's analysis this discourse has been a socially-dominant way of looking at the world 'For several centuries, at least in the West'—so much so that it has been simply 'taken for granted' (2013, p. 53). In Dryzek's description of it, 'Prometheanism' can apparently be read as an overarching world-view of modernity; not only might it be readily recognised as a conception of human potential distinctive to the modern period, but its historical and geographical placing—'several centuries, at least in the West'—seems to identify its origins as lying in the European scientific revolution.

If Dryzek's analysis has merit it would follow that in studying the contemporary discourse of growthism we would gain access to a clearer picture of an overarching world-view of modernity—and vice versa: studying the foundations of a world-view of modernity would help us make greater sense of the contemporary discourse of growthism. The first of these twin propositions—that studying growthism may help us to understand a quintessential world-view of modernity—has informed the empirical analysis conducted so far. Over the preceding chapters I have carried out four different analytical passes at the discourse of growthism, with the aim of illuminating a distinct world-view which lies behind it.

Granting that this analysis does provide flashes of insight into a coherent set of ideas, one might still ask if it necessarily corresponds to an overarching world-view of modernity. How could we be sure? The best way to tackle such questions is to move

onto the second of the twin propositions described above: that studying the foundations of modernity should help in making sense of contemporary growthism. *This* will be the focus of these last two chapters of the thesis.

Pursuing an inquiry into the foundations of a modern world-view should, if it appears to have some resonance with the analysis of growthism, lead us further into the 'hermeneutical circle', whereby an initial interpretation of a text is investigated, generates new insights, and leads to a changed interpretation, based on a deeper understanding. In this case, if we begin an investigation of the elements of an overarching modern world-view with the tentative assumption that there is such a thing, and if the material we are investigating is found to support itself through rational argument and weight of evidence, then this should itself help to substantiate its premises. In short, the hermeneutical way to test the plausibility of a research design is to do it, and then appraise the results.

What this chapter aims to do is to engage with an existing philosophical-anthropological literature on the origins and essence of modernity, such that this can be used subsequently to compare the picture of a world-view which emerges with the analysis of growthism produced over the last four chapters. Section 7.1 begins this effort by locating the precise literature that I am choosing to examine; this is centred around a debate on the nature of modernity that took place in the mid- to late-twentieth century between the philosophical anthropologists Karl Löwith and Hans Blumenberg. Section 7.2 pulls out from this debate, and from the contributions of a wider circle of commentators, the argument that modernity is fundamentally marked by the adoption in the sixteenth and seventeenth centuries of a new ontology of infinity: formerly considered an attribute of God's, the properties of divine infinity then became transferred to an understanding both of the material universe and of its scientific study (and mastery). In Section 7.3, I conclude: First, drawing on Blumenberg and others, I interpret this new ontology as creating a modern theodicy of progress, in which life is to be made meaningful through the belief that over time mankind will liberate itself from the ills of the world via advances in knowledge. Secondly, I point towards the next chapter in which I compare the material highlighted in this chapter with the analysis of growthism produced earlier, making the case for interpreting growthism as an explicit defence of a modern ontology and theodicy.

7.1 The secularisation thesis debate and the nature of modernity

Before going any further we might want to ask: just how much validity does such an apparently straightforward usage of ‘modernity’ have anymore? Isn’t this a thoroughly problematised concept now? Don’t doubts as to the ‘viability of modernity’ (Wagner 2001, p. 12) go all the way back to the ‘romantic revolution’ (Blanning 2012) of the turn of the nineteenth century? Haven’t modernity’s moral and intellectual pretensions been exposed as a myth—one whose function has often been to mystify and justify European colonialism (Gilroy 1993, Chakrabarty 2000, Bhabra 2007) and the unsustainable domination of nature (e.g. Leiss 1972, Horkheimer 2013 [1947], Malm 2015)? Even more fundamentally, hasn’t its very conceptual integrity been shattered—Lyotard (1984 [1979]) having pronounced, in its ‘incredulity towards metanarratives’, the ‘postmodern condition’ as being precisely that of not believing in modernity anymore? Hasn’t Latour (1993) concluded—having first identified the self-definition of modernity as depending on a conceptual division between nature and society, and having then exploded this division as being illusory—that ‘we have never been modern’?⁶⁵

In truth a debunking of modernity (or constituent tropes such as science, progress, and technology) is nothing new, which itself goes to show that puncturing a myth is not the same as cancelling an historical reality. A degree of debunking is intrinsic to the very practice of examining modernity as a world-view, in any case, since performing such an examination necessarily entails a critical dislocation from the world-view upheld by one’s contemporary culture: it thus means understanding it *as* a world-view, an imperfect framing of reality, rather than reality itself. But this critical distancing is also itself a product specifically of the *modern* world-view; such is amply demonstrated by Taylor (1985a), who writes on the links between materialist metaphysics, scientific method, and the detached, ‘buffered identity’ of the self as quintessential elements of modernity. The critical distance required to regard modernity in such a detached manner itself belongs to and thus avows a modern approach to method and the philosophical claims about reality that surround it. Historically, ‘the advent of modernity’ has been traced to the work of early-modern thinkers such as Descartes and Hobbes precisely by virtue of their development of a philosophical mode (and form of self-understanding) which aimed at ‘a

⁶⁵ For a recent example—in a particularly rich and subtle work, which while undercutting the ‘myth of modernity’ tries to avoid constructing a myth out of its own debunking—see Josephon-Storm’s *Myth of Disenchantment* (2017). At its most trenchant it explains its design as being to explore (p. 7) ‘the very fable that there was such an age as “modernity” and that it had certain features.’

distancing of the human self, constitutively a knowledge-seeker [...], from its context' (Wagner 2001, p. 12). In this way we might say that modernity facilitates a critical self-reflection that simultaneously puts itself into doubt and affirms itself as reality.

To return to the quest for philosophical-anthropological literature on the nature of modernity, I want to turn here to what has been termed the 'secularisation thesis' debate. Focusing solely on the positive side of this debate (i.e. the proponents of this thesis), the secularisation thesis holds that important features of modern, secular thought bear the imprint of pre-modern theological concepts, against whose world-view they would ostensibly stand opposed. This argument, in one form or another, has been a recurring feature in analyses of modernity since at least the turn of the twentieth century.

Within this discourse, one of the main themes has involved analysis of the theological origins of capitalism and bureaucratic governance (Weber 1930 [1905]), or of capitalism itself as functioning as a secular religion (Benjamin 1996 [1921]). Another theme has involved an excavation of the theological origins of modern science (Weizsäcker 1964, Funkenstein 1986, Koyré 1991 [1957], Hooykaas 2000 [1972], Whitehead 2011 [1926]), of the eighteenth century Enlightenment (Becker 1970 [1932]), or of classical political economy (Viner 2015 [1977]). Another theme we could identify as a sociological and anthropological focus on religion, and a need for ritual and worship of the sacred as seemingly essential features of individual psychology and social order, such that in a secular age they attach themselves to intramundane objects and practices (Eliade 1959, Durkheim 1995 [1912], Peck 1997 [1978]). Yet another theme has been to analyse the concepts of modern political theory as secularised forms of theology (Schmitt 2005 [1934]), or to view modern political ideologies—not least Marxism—as forms of millenarian political religion (Gurian 1954, Aron 1957, Cohn 1993 [1957], Voegelin 2000 [1938]). Perhaps the most central strand to the 'secularisation thesis', meanwhile, has been a focus on modern faith in progress as being a secular religion, shaped by Christian eschatology and theodicy (Löwith 1949, Bultmann 1957, Taubes 2009 [1947]): and it is this strand of thinking in particular that I will focus on in this chapter.⁶⁶

⁶⁶ While the secularisation thesis discourse may be seen to have peaked in activity in the middle decades of the twentieth century, in recent years, consistent with the 'post-secular' turn (Berger 1999, Butler *et al.* 2011), there has been a resurgence of interest in this discourse. This has encompassed, for example: genealogical analyses of the development of secularity, and its relationship with theology (Lubac 1995, Taylor 2007, Gillespie 2008); a critique of the millennial nature of progressive ideologies in John Gray (2008) and Michael Burleigh (2006); a renewed interest in the analysis of political religion (e.g. Gentile

In its most general sense the secularisation thesis refers to modernity itself as having been generated by a theological revolution, a modern world-view continuing to be shaped by theological concepts even as the character of modernity hides this from itself. A good account of this general form of the secularisation thesis is given by Michael Allen Gillespie, in writing that it is a common

mistake to imagine that modernity is in its origins and at its core atheistic, antireligious, or even agnostic. Indeed, [...] from the very beginning modernity sought not to eliminate religion but to support and develop a new view of religion and its place in human life, and that it did so not out of hostility to religion but in order to sustain certain religious beliefs. [...] M]odernity is better understood as an attempt to find a new metaphysical/theological answer to the question of the nature and relation of God, man, and the natural world that arose in the late medieval world as a result of a titanic struggle between contradictory elements within Christianity itself. [...] W]hile the metaphysical/theological core of the modern project was concealed over time by the very sciences it produced, it was never far from the surface, and it continues to guide our thinking and action, often in ways we do not perceive or understand. (Gillespie 2008, p. xii.)⁶⁷

Of the philosophical anthropologists discussed earlier in this thesis, profound contributions have been made to this field by, in particular, Charles Taylor (2007) and Eric Voegelin (e.g. 1998). While drawing on their work in my analysis, however, it is to another pair of philosophical anthropologists that I would like to turn in explaining the importance of the secularisation thesis for an understanding of modernity: Karl Löwith and Hans Blumenberg. They provide a useful focus here for a number of reasons. To dwell on the first, this is that Löwith and Blumenberg disagree about the central premise of the secularisation thesis, that modernity has a theological/metaphysical origin and character: such contestation is indeed what gives us the secularisation thesis *debate*.⁶⁸ The Löwith-Blumenberg exchange serves to introduce not only the themes of a wider secularisation thesis debate but also its contradictory character—a complication which

2006), and political theology (Critchley 2012, Newman 2018); analysis, whether sympathetic or otherwise, of the connections between Marxist thought and theology (e.g. Boer 2013, Jones 2016); analysis of religion as an innate category of human experience (e.g. Routledge 2018); and a growing focus on the theological origins of economic growth (Mokyr 2017) and of economics itself as an ongoing form of theology, perhaps most prominently in Agamben (2011), but also worked on by others (e.g. Nelson 2002, Goodchild 2007, Cox 2016, Rapley 2017).

⁶⁷ Harries' (2002, p. 15) succinct version is that, rather than imagining the scientific revolution as representing a clean break with theology: 'We are more nearly right when we speak of modern science, and thus also of our own culture, as a product of the self-evolution of the Christian culture of the Middle Ages.'

⁶⁸ For an analysis which puts their exchange into historical context, and discusses the contributions of others such as Carl Schmitt, Jacob Taubes, and Eric Voegelin, see Kroll (2010).

deserves to be explained, lest it undermine the reader's confidence in the central material being drawn on in this chapter.

To briefly outline the Löwith-Blumenberg debate, it was Löwith's thesis that modern understandings of historical development, specifically the idea of progress, were unwittingly secularised versions of a medieval eschatology, itself combining classical ideas of fate with a Pauline vision of history as leading to the Kingdom of God. 'We of today,' Löwith wrote in 1949 (p. 19), 'concerned with the unity of universal history and with its progress toward an ultimate goal or at least toward a "better world," are still in the line of prophetic and messianic monotheism; we are still Jews and Christians, however little we may think of ourselves in those terms.' Löwith's argument 'gained many adherents during the 1950s and 1960s' (Gillespie 2008, p. 11); and while his may have been the best-known version of this thesis, it was also 'proposed by several other writers in the 1940s and 1950s, was not systematically criticized by anyone, and became, in effect, part of the "conventional wisdom" of German scholarship' (Wallace 1985, p. xvi).

Hans Blumenberg first made a detailed critique of the secularisation thesis at a conference in 1962, also attended by Löwith, who perceived it as a direct attack (Kroll 2010, p. 19). In criticising Löwith's argument, Blumenberg was reading it as one of a number of attempts to undermine the status of the modern ideals of scientific practice and rational thought. Blumenberg's objection to the secularisation thesis was its demand that the modern age 'admit retrospectively that it had reached back, illegitimately, to what went before it' (1985 [1976], p. 463). As Blumenberg saw it, the charge of illegitimacy pertained both to the modern's disavowal of its parentage, and to the way in which its ideal of disinterested reason made a travesty of itself in actually being 'nothing but an aggression (which fails to understand itself as such) against theology' (1985 [1976], p. 97).

To turn now to the aforementioned *contradictory* character of this debate, this is brought out if we examine the contributions of these protagonists a little closer; we will soon discover that they are not what they might appear at first glance. In arguing that progress is a secularised form of Christian eschatology, for example, Löwith may be critiquing the modern world-view but he is not defending the legitimacy of Christian theology. Instead he critiques Christianity at the same time, reading eschatology as bearing the modern faith in worldly progress in embryo. From its outset Christianity had, for Löwith, a modern character, the very act of declaring a New Testament necessarily

inviting ‘further progress and innovations, either religious or irreligious and antireligious’, giving rise ultimately to ‘the secular irreligions of progress’ (1949, p. 212). Moreover he sees Christianity, after the initial expectations of an imminent coming of the Kingdom of God had passed away, as having essentially secularised itself. It retained the apocalyptic Christian faith in history’s moving towards a goal and fulfilment, but discarded the ‘living faith in an imminent eschaton’ (1949, p. 198), thereby regarding the end of history as always lying in the indefinitely far future, and thus in practice living—in a reversal of Pauline teaching, we might suggest (though Löwith does not quite put it this way)—as if the order of the world *would* last forever. By the middle ages, the Catholic Church ‘was saturated with worldliness’, and Christian faith ‘overlaid by a vast mass of vested interests and secular concerns’ (1949, p. 157).

Löwith’s main preoccupation—as Blumenberg identified (1985 [1976], p. 28)—was less with the legitimacy of modernity than that of Christianity; or rather, with defending the legitimacy of the pagan world-view of classical antiquity which Christianity had displaced and unwittingly borrowed from. When it came to modernity, Löwith’s additional criticism was that, in the idea of progress, moderns had adopted a mish-mash of Christian and classical ideas—combining a Christian belief in history’s advancing in a linear progression with a classical idea of history moving in endless cycles, without beginning or end—resulting in a philosophical mess (1949, p. 207). Löwith’s sympathy was clearly with Greek thinking; and ultimately he was reaching for a rejection of both secular modernity *and* established Christianity. As Kroll observes, in seeking to root out and overcome theological thinking, and thus work towards the founding of a new epoch that would mark a genuine break with the Christian world-view, Löwith ‘comes remarkably close to Hans Blumenberg’. Indeed, ‘in spite of taking Ancient Greece as his model, [he] is a modern almost in spite of himself’ (Kroll 2010, pp. 18, 19).

As for Blumenberg, here too his position is not what one might at first assume. As Gillespie observes (2008, p. 11), ‘On the surface, Blumenberg’s position seems to be a revival of the conventional view that equates modernity with the triumph of reason, but in fact he adopts a more Nietzschean view that identifies modernity not with reason but with self-assertion.’ The legitimacy of the modern age for Blumenberg is constituted in its being the epoch in which humanity comes of age, understanding itself as being dependent solely on its own resources: ‘the legitimacy of the modern age is not derived from the

accomplishments of reason but rather from the necessity of those accomplishments' (Blumenberg 1985 [1976], p. 99).

Blumenberg's is an existential understanding of history in which mankind searches for a vision of reality in which human life figures meaningfully: epochal shifts occur when a dominant world-view fails in its job of providing a meaningful explanation for the meaning of individual lives. This is, then, a theory of history in which the rise and fall of epochs is one with the rise and fall of their defining theodicies. For Blumenberg medieval Christianity breaks down because of the revolutionary impact of nominalist theology—which, in piously defending an absolute vision of divine omnipotence, had turned God into such a remote and unimaginable figure as to dissolve Christianity's power to offer nomic orientation and a sense of theodical consolation. Modernity triumphs because it offers a new and superior theodicy, in which mankind, through the use of reason and the practical fruits of scientific research, will provide meaning for itself. In this sense, beneath the surface of his prose Blumenberg himself presents secular modernity in the guise of a religion, albeit a faith whose warrant is a flow of intellectual and technological advances.

So: Löwith is not actually defending the legitimacy of Christian theology, Blumenberg not actually defending the status of reason as such, and each in fact is in a large degree of agreement with the other. Such a contrary character is not unique to these protagonists but extends to many articulations of this debate; for some, it discredits the whole field as being too confused to take seriously.⁶⁹ Some of this confusion drops away, however, once we understand this debate as extending through more than one dimension. The first and most obvious dimension concerns acceptance or rejection of the secularisation thesis in an analytical (but not normative or ontological) sense: the question here is purely whether concepts of secular modernity are indeed translations, in some sense, of theological antecedents, irrespective of whether this is viewed as undermining modernity (or indeed Christian theology). Beyond this there is another dimension, that

⁶⁹ See, for example, Toscano's (2010, pp. 210–211) criticisms of the version of the secularisation thesis presented by John Gray (2008), in which Gray sees all modern political ideologies (left, right, and centre) as being based around the idea of progress as infused with Christian messianism. For Toscano this is a theoretical overstretch which strains the credibility of the reader: 'In order for his narrative to include everyone from Trotsky to Dick Cheney, Hitler to Bin Laden, Gray must generate an unstable amalgam between the religious critique of political religion—which depicts Enlightenment rationalism as a hubristic attempt to supplant true faith—and the secular critique of political religion, for which the mere fact of belonging to the category of religion is already a mark of irrationality.'

which concerns the ontological status of the theological or secular world-views: the question here is whether it is a theological or the modern world-view (or particular features of it, such as modern science, the idea of progress, or individual political ideologies such as Marxism) which is *correct* in its fundamental understanding of reality. Perceiving this debate as extending through more than one dimension helps to make sense of the positions which its contributors stake out for themselves, in turn bolstering the status of the debate as a whole as a worthwhile frame of analysis.⁷⁰

More importantly for the purposes of this chapter, understanding the secularisation thesis debate in this way helps us to isolate its core assumptions about modernity, in that this is common to all positions within it: that there is such a thing as the modern epoch, and that it is negatively defined by its relationship with a preceding epoch, whose socially-dominant ontology was explicitly theological. This relationship may be conceived of as an unwitting borrowing, or as a negative shaping via a conscious rejection, or as the sheer contrast established by a new way of perceiving the world; and the resulting development may be welcomed as the liberation from superstition, or regretted as the losing touch with a metaphysical reality—or some combination of the two. But the important thing is it places the existence of modernity as a distinct epoch, and the transition to it from a preceding epoch, centre-stage.

This is the first reason for selecting the secularisation thesis debate as a prism through which to examine the modern world-view. There are others we could mention. The accent which Blumenberg's theodical philosophy of history places on a human need for meaning would be one; this links his work to the concerns of existential social science and philosophical anthropology which are at the heart of this thesis. Another would be the influence which Löwith and Blumenberg have had on other philosophical anthropologists referred to in this work (see, e.g., Styfals 2014), as well as the advances

⁷⁰ As one example, we could consider the analysis of John Milbank (1990), who from a theological standpoint critiques the secularisation thesis on the grounds that secularity was itself a theological construct. We can make sense of his argument by understanding his concern as being to defend the legitimacy of the theological; this leads him in *practice* to support the secularisation thesis, in the sense of finding a theological influence behind modern ways of thinking, while saying in fact that he rejects it, on the grounds that he does not recognise the independent legitimacy of the modern. We have never left the theological, he is saying; thus the secularisation thesis, while true analytically, is ontologically invalid. In fact, precisely in the way the thesis is mistakenly *denied* by others (i.e. people who *think* they are secular), it would appear to confirm from his perspective that this was an invalid question to ask in the first place.

made by those who have commented on their work: two such will be highlighted in the rest of this chapter, Elizabeth Brient (2002) and Michael Allen Gillespie (2008).

Most importantly of all, we might observe that Blumenberg endorses the idea that modernity is defined first and foremost by a shift in belief regarding the ontology of infinity: in short, that modernity is marked by a new belief, emerging in the late sixteenth century, in the Universe as being infinite in extent. Such a decisive pronouncement on the metaphysical origins of modernity stands out, given Blumenberg's stated opposition to the secularisation thesis on normative/ontological grounds: it suggests that this is such a powerfully persuasive argument that he has no quibble with it, no matter his larger antagonism towards any questioning of the legitimacy of this transition.

This idea, that a new concept of an immanent or material infinity was foundational to the emergence of a modern world-view, has also been worked on by others, not least Brient and Gillespie. Such work, I would like to argue, presents itself as a key to unlocking an understanding of some of the deepest motivations underlying contemporary defences of indefinite growth. To begin to make sense of this we need to unpack what this work on the idea of immanent infinity is saying.

7.2 The immanence of the infinite: in four ways

I would like to highlight here three main forms in which it has been argued that the idea of divine infinity was immanentised at the birth of the modern period: the ideas that the physical Universe is limitless (extensive infinity), that the things of the natural world possess an infinite individuality which can never be exhaustively known (intensive infinity), and that the mind has an infinite capacity for learning (infinite mind). These three ideas can be seen as resulting in a fourth, overarching idea: of humankind as collectively and endlessly progressing into a future of limitless knowledge and power.

Extensive infinity: the infinite Universe

In Blumenberg's philosophical history, 'the epochal threshold between the medieval and the modern world is fundamentally marked by the process of the infinitization of the cosmos' (Brient 2002, p. 9). Others have interpreted the emergence of a modern ontology in similar terms, Voegelin (1998, p. 136), for example, writing that: 'The

medieval idea of the closed cosmos gives way to the idea of an open, infinitely extending universe evoked as a projection of the human mind and of its infinity into space’.

Despite his opposition to the secularisation thesis, Blumenberg’s account of how this new ontology of infinity took hold in people’s minds endorses the idea that this involved the intellectual transference to the physical world of an attribute formerly reserved for God: ‘The world of the Middle Ages was finite,’ he declares, ‘but its God was infinite; in the modern age [quoting Weizsäcker (1964, p. 180)] “the world takes on this divine attribute; infinity is secularized.”’. Brient glosses Blumenberg’s account as follows:

The cosmos of the Middle Ages is a finite, well-ordered whole, a closed hierarchy, whose order and value (indeed its very being) is granted by an infinite and benevolent God. In the transition to the modern age, the world comes to “acquire” the divine attribute of infinite being, but only at the price of the destruction of this ancient order and the unmooring of humanity from its traditional place in the meaningful totality. (Brient 2002, p. 98.)

This focus on a transference of the divine attribute of infinity to the immanent cosmos is again something Blumenberg shares with others. Koyré provides a celebrated example in his *From the Closed World to the Infinite Universe* (1991 [1957], p. 276), which concludes: ‘The infinite Universe of the New Cosmology, infinite in Duration as well as in Extension, in which eternal matter in accordance with eternal and necessary laws moves endlessly and aimlessly in eternal space, inherited all the ontological attributes of Divinity’. While pushing its development further back into the medieval period, this ontological history is notably supported by Cassirer (2010 [1927]) and Harries (2002).

For Blumenberg the key figure in this process is Giordano Bruno, the sixteenth century visionary who is popularly remembered for being burnt at the stake for his belief, at that stage declared heretical, that the Universe is infinite (*Standing Up in the Milky Way* 2014, Martinez 2016). In this, he was developing what seemed to be the logical implications of the Copernican revolution in astronomy (Harrison 1987, p. 37); with Earth displaced from the centre of the cosmos, it was now open to speculation that the cosmos had *no* centre, and thus was infinite in extent (Koyré 1991, p. 39). What made this a heresy was the implication Bruno drew from it: if the Universe were truly endless, then it would have to be everything there was, leaving no room for anything outside it—including God. There could be no transcendent dimension, no upper world, no Heaven. Bruno’s theological justification for this position was the pantheistic belief that, having

spent himself utterly in the act of making the cosmos, the Creator no longer existed apart from his Creation: the Universe was divine. For Blumenberg (1985 [1976], pp. 78–79), it is through ‘the logic of his concept of creation, which requires the equivalence of creator and creation and thus facilitates precisely this “migration” of one of the most essential attributes of God’ that ‘Bruno applies the attribute of infinity to the world’.⁷¹

It is here that we can begin to link this discussion to preceding talk of ‘a modern world-view’. Once present in debate, the logical implications of such a metaphysical revolution as Bruno helped to establish will tend to work themselves out, realising their potential in unpacking a set of entailed propositions about existence. If the Universe is infinite in extent, how could it ever come to an end? There could be no time after it, just as there is no space outside it: time itself would have to be coterminous with its existence. Following Bruno, as Koyré (1991 [1957], p. 275) documented, a belief could grow that the Universe is not only spatially infinite but temporally eternal—thus without need of external explanation: it has existed for as long as time itself. Bruno’s own sense of the eternal nature of the cosmos established for him a sense of immanent immortality: the unlimitedness of the Universe

was the magic formula to conjure the dread of change, decay, and death. Precisely because of the infinity of the universe there can be no real end to anything; even the smallest part of it merely changes its appearance, merely transforms itself, but cannot perish. This infinite universe is a plenum, there is no emptiness in it, no Nothingness which could engulf things. (Choron 1963, p. 105.)

While a product of metaphysical—and, for many, explicitly theological—speculation, this new concept of the Universe can be understood as ‘covering its tracks’, as it were, in the way in which its accent on the immanent relegates the transcendent (including a belief in the ontological reality of metaphysics) to a kind of theoretical

⁷¹ Blumenberg comes close here to endorsing the secularisation thesis himself. As he remarks (pp. 78-79), ‘If anything deserved to be called secularization, it would be the way this divine attribute comes to be embodied in the world.’ He maintains, however, that it was not the case that ‘infinity was usurped for the world in order by this means to let the world take over God’s position and function’ (which Blumenberg identifies with the secularisation thesis). Rather, Blumenberg suggests that ‘the attribute of infinity crossed over from God to the world because in its highest intensification the idea of creation simply cannot avoid this consequence’; it was a by-product of a certain ontological turn, in other words, which itself was innocent of any direct transmutation of theological ideas. Blumenberg supports this distinction via a complex argument (that the modern infinite Universe represented a ‘reoccupation’ of an overhanging theological frame of the Trinitarian position of the Son) which, to my mind, is quite unconvincing; but this need not detain us here.

netherworld, seen ultimately as being otiose, unnecessary for explaining anything.⁷² As Blumenberg reads it (p. 551), Bruno's infinitisation of the immanent gives rise over time to the scientific vision of nature: 'Nothing "supernatural" is possible', since there is no room for anything beyond nature to exist.⁷³

In this understanding of the secularisation thesis, an idea of infinite being is, first, imaginatively transferred from the idea of God to that of the physical cosmos; the idea of the Universe as being infinite then undermines belief in the ontological existence of anything outside of it, thus of any non-physical, non-temporal dimension; this, in turn, undermines the possibility of recognising the vision of an infinite Universe as itself an *idea*, a product of theologico-philosophical speculation, rather than unquestionable fact. This, we ought to recognise, creates a new form of ontology: a physical reality understood as being the only objective reality, whose essence is that is both material *and* infinite.

Intensive infinity, and the contraction of absolute into privative infinity

While there is agreement between Blumenberg and several other authors that it is Bruno's 'infinitisation of the Universe' which functions as the crucial marker of the 'epochal threshold' to modernity, some have gone beyond Blumenberg in arguing that this infinitisation comes in more than one form, encompassing other intellectual antecedents and stretching back further in time. One penetrating reading along these lines has been provided by Elizabeth Brient, in her commentary and expansion on Blumenberg's work (Brient 2002). Brient's main contribution (as I am using it) lies in her

⁷² The response by the mathematician Laplace, when on an occasion in 1802 (Herschel and Herschel 2013 [1933], p. 310) he was asked by Napoleon where God featured within his physics—'Sire, I had no need of that hypothesis' (De Morgan 1872, p. 250)—is perhaps the classic articulation of this spirit, the scientist's 'barely disguised usurpation of God's place in the universe' (Mirowski 1989, p. 28). That this quotation may be garbled or apocryphal does not reduce the resonance of the sentiment: that it has been popularly retold itself suggests it expresses a belief which is widely acknowledged.

⁷³ While opposing Blumenberg's normative endorsement of a secular modernity, John Milbank chimes with his analysis here in depicting this modern ontology as a 'sealed-off totality of nature, where eternal justice consists in the most invariable rules' (1990, p. 10). Support can also be found in the argument of Charles Taylor (2007), that over time these ontological foundations created the 'immanent frame' which forms the socially-dominant view of reality within modern culture: the image of the cosmos as embodying the divine fades away, and the intramundane is left as 'objective' reality, understood as being the only real reality there is. See also Weber's analysis, that the 'general result of the modern form of thoroughly rationalizing the conception of the world and of the way of life [...] has been that religion has been shifted into the realm of the irrational' (Weber 1946, p. 281).

analysis of the legacy of Nicholas of Cusa (Cusanus), the fifteenth century Neoplatonist, in seeding new thinking on the infinite which would later come to fruition in the thought of Bruno, and in the development of a modern idea of science which succeeded him.⁷⁴ In doing so, Brient also teases out the presence of more than once concept of infinity as being involved in the birth of the modern.

For the purposes of this discussion we can see Brient's contribution as taking the form of a two-stage argument. The first stage is to find in Cusanus's work a theory in which the form of infinity found in Bruno's subsequent infinitisation of the cosmos is understood to be a lesser, negative form (privative infinity), derivative of a parent, positive form (absolute infinity).

As Brient defines it, privative infinity is 'that which continues endlessly':

Here the infinite is that which always already oversteps any possible boundary. The notion of a continuous or continuing magnitude, divisible or progressive *ad infinitum* (e.g. a line or the series of whole numbers) is clearly of this sort. This is the notion of the infinite as the essentially incomplete, the always outstanding, that which can go on and on indefinitely. (Brient 2002, p. 122.)

This form of infinity was central to the notion of God (and the Neoplatonic concept of the One) as the 'inexhaustible source or wellspring of reality', with 'no end or limit to their bountiful giving' (Brient 2002, p. 122). As applied to popular ideas of space and time, or of the impossibility to think of a highest number beyond which one could not go on counting, it is also this which for most people is probably the sole recognised form in which infinity is understood today.⁷⁵

Against this concept of an 'indeterminate, unending, or inexhaustible' privative infinity, Brient, following Cusanus, contrasts the concept of absolute infinity, 'understood as a principle of unity, totality, perfection, or completion' (Brient 2002, p. 121). This can be understood as the parent concept of infinity, on which privative infinity is dependent: the idea in privative infinity of an indeterminate, never-ending extent or sequence does

⁷⁴ Cassirer (2010 [1927]) provides another notable example of a reading which both focuses on the legacy of Nicholas of Cusa, and which suggests as a result that there is more than one idea of infinity to take note of. Brient's analysis is focused on here, in part because, writing later, she is able to profit from and comment on previous contributions to the secularisation thesis debate in a way Cassirer was not.

⁷⁵ See for example Lindsay's (2013) disquisition on the idea of infinity, itself containing a survey of other texts on the subject. Lindsay states exclusively: 'Infinity, qualitatively, is the idea of being without bound [...]'.
[...].

not entail a mere hope or suspicion that we may keep discovering that a total has been added to, or a boundary surpassed; on the contrary, the concept depends on the understanding that this unending, inextinguishable quality is *absolute*. We must already know in advance that there is no limit to our ability to continually add one to the highest number we could think of; our understanding of limitlessness depends on an understanding of *completion*, of privative infinity (the indeterminate) being always already comprehended by absolute infinity (the all-encompassing). Absolute infinity is central to the idea of God as a perfect being which lacks nothing and thus cannot itself be defined by privative infinity—cannot itself, that is, be unending in the sense of continuously expanding beyond limit—since that would imply that it was incomplete, unfinished. Instead, absolute infinity is that which provides the certainty that that which is defined by privative infinity (a sequence of numbers, say) will go on *forever*; that the force of creation is *inexhaustible*: this application of the infinite to the finite is precisely the meaning which the concept of privative infinity seeks to capture; but it only has its meaning by virtue of its absolute parent concept.

As Brient sets out, this relationship of infinite to finite borrows from the metaphysics of Neoplatonism, in which existence in all its variegated individuality, the Many, is to be understood as deriving its existence from the totality and unity of existence, the One. Just as in Neoplatonist thought the One is said to ‘unfold’ or ‘contract’ itself in the Many, and thus the totality of existence is understood to be present within each individual thing, so in ‘the late Middle Ages [...] the Neoplatonic notion of unity in the manifold is developed into an understanding of the incarnation of the infinite in the finite’ (Brient 2002, p. 96). Brient writes:

Cusanus underscores the fact that, properly speaking, only God is infinite, that is, infinite in an absolute sense. The universe, he insists, is infinite only in a privative sense. If we consider its material and spatial aspect, this means that the created cosmos cannot be conceived of as physically bounded by anything else. It is privatively infinite in the sense that it *lacks* limits in which it can be enclosed. It is the nature of the world to overrun any boundaries I might posit for it. Thus the universe is an epiphany of the divine Infinite, a ‘contracted’ image of God. It is infinite unity ‘unfolded’ in diversity and multiplicity, endlessly spread out in space and time. (Brient 2002, p. 205.)

This brings us to what we might call the second stage of Brient’s argument. She sees in Cusanus’s philosophy of infinity—in particular, this idea that each ‘created being [...] comes to be viewed as a “finite infinity,” as the “contraction” of the divine infinite into

each unique individual' (Brient 2002, p. 120)—the seeds of the modern concepts both of nature and of its scientific study. The transference of a divine attribute of infinity from God to cosmos is more complicated than Blumenberg analyses it, precisely because there is more than one concept of infinity. It is not just a matter of transferring an idea of unlimitedness to the physical Universe, to create the understanding that it is boundless in space and time. In addition, it

is crucial to recognize [...] that nature also transcends our power to conceptualize it at the local level, by virtue of what I am calling an 'intensive' infinity. Each oak tree presents itself as infinitely rich and utterly unique, conceptually inexorable in its intensive unity. Thus the 'infinitezation of the universe,' which occurs at the end of the Middle Ages and marks the transition into the modern world, must be understood intensively as well as extensively. (Brient 2002, p. 138.)

What Brient is saying is that accompanying the new idea of a boundless cosmos came a new idea of nature, the world around us, as incarnating the absolute infinity of God. And this, she discerns, was crucial for the development of the idea of modern science. Not only did it present nature as an object for study which embodied in its own infinitely individual reality the hidden, absolute being of God (thereby providing an incentive towards empirical investigation of the natural world: to gain knowledge of divine reality); it also gave rise to the model of scientific inquiry, as the endless, additive increase in knowledge, forever approaching but never quite attaining absolute knowledge. As she writes:

Nature, in the modern age, is thought of not only as infinitely extended in space, but also as exhibiting an infinite richness in all of its parts. Each particular, each individual being is grasped as utterly unique, as infinitely rich and consequently as conceptually inexorable. Thus the infinitezation of the real leads to an infinitezation of the knowable—the radical shift in ontology grounds a corresponding shift in epistemology, so that the progress of human knowledge is understood as an unending project infinitely extended over time. (Brient 2002, pp. 145–6.)

Infinite mind

Thus far we have considered the infinitezation of the cosmos, first in an extensive, then in an intensive sense. The latter provides a bridge to an understanding of a third aspect to this process of modern infinitezation: the individual human mind, too, began to be viewed as potentially infinite. The key to unlocking this door to experiencing oneself as an

infinite being lay in observing—and over time, mastering—the divine infinity in the natural world into which God had fully emptied himself. The commentator to whom I am turning for an exposition in this case is the philosopher Michael Allen Gillespie (2008), focusing here solely on his exposition of the relationship between God, man, and nature in the thought of Descartes.

Following Gillespie, we can understand Descartes as performing a double movement in immanentising divine conceptions of the infinite, thereby constructing a theologically-inspired science. One movement is to identify God's will with causation in the natural world. This proceeds from a philosophical innovation by which Descartes immanentises the absolute infinity of God, defining God as an infinite substance, different only in quantity from other, finite, beings—'a new understanding of infinity that is radically different than anything that preceded it and that is essential to the formation of the mathematics that is at the foundation of modern science and the modern world' (Gillespie 2008, pp. 203, 202). Descartes's view of this infinite substance of God is of 'an unbounded plane extending in every direction', with all the finite beings of the world being 'negations of this infinity, bounded figures inscribed upon this plane' (Gillespie 2008, p. 203). Within this understanding, the thinking mind can recognise its own finite individuality by simultaneously recognising what it is not: the unbounded extent of existence as a whole, which in Cartesian terms is synonymous with the infinity of God. God, meanwhile, cannot recognise his own individuality, since he *is* everything; there is nothing greater against which to define himself. This means, in Gillespie's reading of Descartes, that God has no individuality: he is pure, rather than a personal, intelligence. Having immanentised God's infinity as unbounded extension, Descartes translates this impersonal intelligence into equally immanent terms: 'As infinite, God's will is not directed to anything specific; it is causality as such. God is the *causa sui* because he is pure causality, the mechanism at the heart of mechanical nature, a how and not a what. Looking backward we could say that he is *fortuna*, or forward, the source of the motion of all matter' (Gillespie 2008, p. 204).⁷⁶

⁷⁶ Elsewhere Gillespie (2008, p. 229) reads a similar philosophical understanding in Hobbes: 'Effectively then for Hobbes, God is the same as the causal process or, in the words of *Leviathan*, nature is God's artifice, his continuing activity'. This reading echoes that of Spragens, for whom Hobbes' immanentist cosmos 'has no order, no structure, no end or limitation', in which causation is 'an endless chain without a goal' (Spragens 1973, p. 63). The infinitisation of the cosmos, under this interpretation, simultaneously made the physical chain of causation endless, and sealed it off from the influence of any higher orders of design or meaning.

If this—the translation of God’s infinite intelligence into the flow of causation operating through the infinite extension of nature—is the first of Descartes’s double movements, the second is his vision of divine omnipotence, which he translates into the immanent power of science, as wielded by humans: finite beings whose minds are capable of conjoining with the infinite mind of God. The path he identifies to actualising this power is scientific method: this Descartes conceives as allowing the individual mind to understand and harness the divine will that is manifest in the causal laws of nature, thereby enabling finite beings to ‘master nature utterly and dispossess God entirely’ and ultimately to ‘become god’ themselves (Gillespie 2008, p. 205). This ambitious conception of mankind’s potential is recognised as being both possible and necessary by God’s very status as an infinite being: ‘In this reading, Descartes’ proof of God’s existence is a proof of God’s impotence or at least of his irrelevance for human affairs. As Descartes puts it, whether or not God exists, nature operates in much the same way and in either case we must use the same mathematical means to understand it’ (Gillespie 2008, pp. 204–5). God’s absolute impersonality is thus made manifest in universal laws, meaning he is removed from playing an active role in the cosmos; this both leaves the stage clear for humans to make our own destinies and gives us the means to do so. It yields the ‘goal of Cartesian science [which] is to master nature, or more correctly to master this motion and this causality at the heart of nature’; God as previously conceived becomes ‘dispossessed of his absolute power and his world, which falls increasingly under the hegemony of the scientific ego’ (2008, p. 204).

The potential which Descartes identifies in man derives from our being both thinking beings and finite beings. As thinking beings we are capable of accessing ‘true “ideas” [which] are the same as those in the divine mind that has no corporeal imagination’ (Gillespie 2008, p. 267); as finite beings, we are capable of harnessing this divine understanding to our particular, embodied, ends. It is this combination which means that the human individual ‘is thus not constrained by the finitude of this world and consequently can imagine becoming its absolute master’ (Gillespie 2008, p. 199).

Infinite progress

These three forms of infinitisation—the extensive infinity of the boundless cosmos, the intensive infinity of the things of the world, and the infinitisation of the human mind via access to the ideas of God—can all be seen to be involved in the creation of the idea of progress: an idea of humankind enjoying, through ongoing study of the intensive infinity of the world, a boundless future of endless advances, in which we come ever closer to realising the potential of our limitless minds in progressively bringing nature under our control.

Regarding intensive infinity, the crucial point to recognise is the idea of an infinite, divine essence within all natural things: this means that nature provides an ‘inexhaustible field of investigation directing thought toward an objectivity that is never entirely to be attained’ (Brient 2002, p. 185). Brient writes on how this quality of intensive infinity ascribed to the natural world came to be transferred to an idea of the human study of nature: ‘the modern notion of unending progress in science (in particular the ability to grasp one theoretical construct as in fact “better” than another) depends on an understanding of nature as itself the ever-elusive measure for human theorizing’ (Brient 2002, p. 142). Scientific investigation may thus be thought of as a series of ‘potentially unending attempts to better approximate reality’ (Brient 2002, p. 101): it is a project endlessly open to refinement and advance, since it is impossible ever to fully comprehend the infinite individuality of things, any more than one could comprehend God in his infinite existence. The conception of God unfolding his divine being in the things of creation provides us with the confidence to believe that it is worth not only studying natural phenomena (they are both intelligible in themselves and revelatory of the divine) but to go on studying them (we know there is always more to be discovered, since we can never equal the understanding of God).

One of the central contributions of the idea of *extensive* infinity, meanwhile, is that it gives rise to the idea of an infinity of time in which to make collective advances to our discoveries. Gillespie details how, prior to the scientific revolution, renaissance humanists such as Pico della Mirandola had already established the idea of humans as having a ‘quasi-divine capacity for self-making’. Yet they still thought of mankind as being inescapably limited by our individual mortality—‘Fortune plays too powerful a role in human affairs, and death established an ultimate limit to human striving’ (Gillespie 2008, p. 87). The idea of an eternity of future time which entered consciousness with Bruno, combining with a new approach to science which valued incremental and collective

advances in knowledge, created the conditions for something new. Now it became possible to envision the entire succession of humanity, as did Pascal, as ‘one man always subsisting and incessantly learning’ (Bury 1987 [1920], p. 68), producing the ‘first satisfactory view of general progress’ (Löwith 1949, p. 74): ‘In this way, it was possible to imagine a human will of unlimited longevity that might finally master the natural world’ (Gillespie 2008, p. 37).⁷⁷

Crucial to this development was a new understanding, exemplified in Bacon, of science not as a work of individual creative genius but as an impersonal method that could be worked on, and added to, in concert with others as a quasi-immortal collective. This we can see as producing the characteristically modern idea of scientific progress. It begins with ‘the humiliation of the human spirit, since [instead...] of acting as lords of creation, in the way that humanism suggested, we must become apprentices in nature’s workshop’ (Gillespie 2008, p. 38)—Bacon denigrating scholastic philosophers, with their emphasis on reason independent of empirical experience, as ‘like spiders, [who] spin webs from themselves’ (Bacon 2008 [1620], p. 79). It proceeds through discovery of a method by which nature’s secrets may be known: in this way we may achieve a marriage of ‘Mind and the Universe’, from which may spring a ‘race of inventions that may in some degree subdue and overcome the necessities and miseries of humanity’ (Bacon 1980 [1620], p. 27). This hope then becomes worked into a millennial faith in our collective capacity over the vast expanse of future time to translate our increasing knowledge into ‘the enlarging of the bounds of Human Empire, to the effecting of all things possible’ (Bacon 2009 [1627], p. 51).

On the idea of the infinite mind, this can be seen as providing the central faith which runs through the idea of progress: the idea that we humans have a limitless capacity to develop our understanding. The ‘infinity of the absolute’ is not only reflected in the extensive infinity of ‘the image of the universe without spatial limits, stretching to indeterminate distances’ but also within our understanding, so ‘that the mind in its progress recognizes no *ne plus ultra*, no limit to its striving’ (Cassirer 2010 [1927], p. 69): thus ‘The “I” is as grand as the infinite cosmos, since it is in oneself that are found the principles for knowing it in all its infinity’ (Cassirer, in Seidengart 2012). Once the mind

⁷⁷ John Andrew Benjamin captures the sense of endlessness in the ‘quintessential modern conception of progress’ in writing of progress as being understood ‘as truly open-ended, not a process moving toward a genuine consummation, but a process that will continue indefinitely’ (Benjamin 1993, p. 17).

is seen as a potential reflection of divine infinity, then the idea follows that in order to realise our true nature, our knowledge must endlessly increase towards the regulative ideal of God's absolute infinity: thus develops an 'understanding of human nature as an unlimited will toward knowledge, the foundation for the modern ideal of infinite progress in science, understood as the drive toward a more and more objective, increasingly adequate picture of the world' (Brient 2002, p. 180). Our 'unending capacity for progress', an advance that can never stop since we can never fully grasp the omniscience which is God's alone, is precisely this translation into privative infinity of the absolute infinity of God (Brient 2002, pp. 226–7).⁷⁸

7.3 Conclusion: the modern theodicy

This idea of infinite progress can be understood under another heading, that of theodicy. Strictly defined, theodicy refers to the vindication of the divine attributes of God in respect to the existence of evil; but it can be understood as a doctrine to make sense of, and thereby resolve, the 'problem of evil' more generally. The secularisation thesis, especially in Blumenberg's hands, can be seen as making the case that modernity has been marked from the beginning by a characteristically *modern* form of theodicy.

Blumenberg's theodical philosophy of history is too rich to be unpacked fully here (let alone presented alongside the contributions of others such as Löwith and Voegelin), but an indicative flavour of such theorising can be gained from the following treatment of a passage of commentary by Kroll (2010, p. 179). The modern theodicy, for Blumenberg, was preceded by a breakdown of Christian theodicy whose origins lay in the Augustinian teachings of original sin and predestination: while these were themselves an attempt to strengthen Christian theodicy by stressing that the world, in accordance with God, was good in itself (and only made bad by mankind's sinfulness), this ultimately weakened its effects: 'The consequence of this thought for human self-understanding was that man found himself burdened with the responsibility for the state of the world whilst being denied any agency in improving reality for the better by his own actions'. Against

⁷⁸ In Voegelin's (1948, p. 488) critical retelling of this same story the rise of modern science represented 'the greatest power orgy in the history of mankind', at the bottom of which could be found 'a gigantic outburst of magic imagination after the breakdown of the intellectual and spiritual form of medieval high-civilization.'

this dispiriting doctrine a modern vision first asserted itself whose essence was the optimistic belief that evil was only an epiphenomenon which would over time be eliminated by the unfolding of God's plan for human history. Ultimately such optimism was declared naïve and unsupportable—the satirical text of *Candide* (Voltaire 2006 [1759])—but only insofar as it applied to the overhanging belief in a divine providence. At this point, summarises Kroll, 'Theodicy became radicalized to the point of absolving God not only from the ills of the world, but also indeed from any responsibility for Creation. As a result, man became the steward of history, charged with the task of completing God's work in the shape of a better world in the future.' This gives us the modern theodicy in its finished form: humankind is on its own, but it will take of itself. We have this hope to sustain us, that, though the present be riddled with affliction, yet '*Some day all will be well*' (Voltaire 1877 [1756], p. 478). We make our own fate, once providence is discarded: this is what progress is, what it means.⁷⁹ And our faith in the infinite conditions for progress—the extensive infinity of time and space, the intensive infinity of nature's secret treasures, the infinite collective mind, tapping into the laws of causation—is what gives us faith in ourselves to make our fate heroic.⁸⁰ Over time, in 'the retreat from faith' which gathered pace in the later nineteenth century, so 'the fervent application of effort to the transforming of the material environment came to be invested with the premium of secular salvation': thus a theodicy came into maturity whose 'soteriology assumes that through the sciences, men can eventually achieve freedom from those constraints which they fear and hate—the illnesses, hunger, disease and cold which shorten life—and it promises the means to fulfil all their material needs' (Price 1986, p. 15).

The importance of this interpretation of the idea of progress will become clear in the next chapter, when we re-examine the meaning underlying the examples of growthist

⁷⁹ Löwith writes (1949, p. 60): 'J.B. Bury, in his study of *The Idea of Progress* [1920], has shown how this idea emerged in the seventeenth century and developed into a common opinion. The belief in an immanent and indefinite progress replaces more and more the belief in God's transcendent providence. "It was not till men felt independent of providence that they could organize a theory of progress," and vice versa: as long as the doctrine of providence was undisputed, a doctrine of progress could not arise. Eventually, however, the very doctrine of progress had to assume the function of providence, that is, to foresee and to provide for the future.'

⁸⁰ Of course in playing the hero, history becomes our stage, and it thus becomes all-important to imagine history—which is to say, the future—as continuing as far as the eye can see (if not forever). Hence the importance of posterity to Enlightenment thought, as recorded by Becker (1970 [1932]); should our confidence in the future of humanity falter, the whole theodicy of progress would collapse. This is precisely what Diderot found so dreadful about the idea of a comet wiping out humanity even if this were a thousand years away—'What a waste of time to embellish a house that would be gone in a moment!' (1876 [1765], p. 90).

discourse we have encountered earlier. What the suggestion that progress functions as a theodicy for the modern, secular age does is indicate just what may be at stake in the limits to growth debate. If growthism were to be understood in part as a defence of the modern world-view, and a theodicy of progress were to be understood as its foundational support, then this would suggest that at bottom growthism perceives itself to be a defence against evil. Or rather, it perceives its antagonist, limitism, as a doctrine of nihilism, which exposes us to evil without either consoling creed or reforming power.

Before we can begin this rereading of the themes excavated in our preceding chapters, however, a little more preparatory work may still be required. Not least, it would be important—if only to strengthen the positive argument I want to make—to briefly consider the arguments of some of the major critics of the secularisation thesis. Such critical voices might be expected to reject this entire project—of reading contemporary texts as a defence of an epochal theodicy—as particularly tendentious. With such critical arguments will we commence the next chapter.

8: Growthism as a defence of the theodicy of modernity

This chapter presents the second half of the philosophical-anthropological analysis begun in Chapter 7. That last chapter suggested a theory by which we could interpret growthism, at its core, as a defence of an epochal world-view of modernity. To begin to substantiate this theory I sketched an intellectual history of the formation of a distinctive world-view in the early modern period, summarising the work of a number of analysts of the ‘secularisation thesis’—the likes of Ernst Cassirer and Hans Blumenberg, and their more recent interrogators Michael Allen Gillespie and Elizabeth Brient. The purpose of that presentation was to point to the existence of an established theory which: first, affirms that there *is* such a thing as modernity— something which exists as a distinctive epoch, and is defined by foundational features of a particular understanding of reality; second, which argues that this ontological vision is shaped by its relationship with a preceding theological vision; and third, which discerns the most essential features of this modern world-view to be beliefs in the ‘immanence of the infinite’—the material infinity of the Universe, the interior infinity of the phenomena of the natural world, and the infinite progress by which accreting scientific knowledge of these phenomena would enable humanity over time to transform man’s limitless will into reality. Altogether I suggested (extending an argument of Blumenberg’s) that this vision had given rise to what we might call the ‘modern theodicy’: a form of secular faith, in which mankind would see itself as having been given the means to take responsibility for its own fate, with the ills of the world being progressively eliminated by the advance of human knowledge and power.

The point of this chapter is to tie this analysis to my presentation of the discourse of growthism, and to interpret the latter in light of the former. At the centre of this effort is a process of going back through the references to growthist discourse over preceding chapters, and extracting references which appear to resonate with the themes relating to the foundations of modernity presented in Chapter 7. This work begins by drawing attention to instances in which both growthists and their limitist critics present growthism as a defence of progress and modernity: my interpretive analysis is thus shown to be supported by protagonists in the limits to growth debate themselves. Following this, I pursue a more detailed engagement with growthist thought, fastening on examples of ideas and language which instantiate a set of underlying beliefs: in the infinity of the

Universe, the limitlessness of natural phenomena (i.e. in their status as natural resources), and the idea of unending progress. This analysis takes up section 8.2.

This analysis is preceded by a discussion (section 8.1) which aims to intensify its persuasiveness. The tone of this discussion is defensive: it constitutes a reply to anticipated criticism that the very attempt to tie a contemporary debate to the metaphysics of the early modern period is intrinsically precarious, relying on an insupportably bold set of assumptions. In countering this potential criticism I refer to established critiques that have been made of more celebrated attempts to use the secularisation thesis to trace the intellectual history of contemporary patterns of thought. In a brief treatment I find these critiques to suffer from the faults they ascribe to their objects of study: their blanket rejection of the principle of intellectual continuity over a *longue durée* itself appears tendentious, and their preferred alternative—theories which hold that socially-important ideas can pop into existence without intellectual forebear—to be themselves making a far more precarious explanatory leap.

Following the linking of growthist themes to the founding ideas of modernity in 8.2, the chapter concludes (section 8.3) by setting this discussion in the context of metaphysical sociology, as explored in Chapter 2. As set out in that chapter, theories within this field posit an ever-present human need for immortality belief-systems—an existential foundation for preserving a sense of life's meaningfulness in the face of our knowledge of mortality. Such theories recognise that the form in which this human nature expresses itself—the particular forms of immortality belief—will change over time, as our socially-dominant ideas about the nature of reality change. And in a secular age the immortality belief-system unique to the epoch has taken the form of progress: *this* is what the modern theodicy is, or what it does for us. Progress gives us a secular faith in the indefinite advance of humankind, these theories suggest, in which we can vicariously enjoy a sense of ongoing life that transcends our own individual existence. Referring to these theories adds to the linkage of growthist and early modern thought. It suggests that what we can observe is not only the intellectual path dependency of an historically successful world-view, but a pattern of belief that has been actively sustained because of an existential need. This interpretive analysis would suggest an explanation for why growthists defend the idea of progress with such passionate and (in some cases) irrational arguments: it is for them all-important to maintain the epochal theodicy, and thereby defend a sense life's meaningfulness in the face of chaos and nihilism.

8.1 Critiques of the secularisation thesis and its genealogy of progress

What is being presented in these two chapters of philosophical-anthropological debate is itself a form of the secularisation thesis: it endorses those analyses which understand early modern metaphysics as having been shaped by a theological inheritance, and itself views the contemporary discourse of growthism as having been shaped by those early modern metaphysics. This suggests it would be useful to consider critiques which have been made of established forms of the secularisation thesis: where such critiques focus on essential elements common to such a project they should also be relevant to the version presented here. Subjecting such critiques themselves to critique should then, if persuasive, be a means of bolstering the credibility of my own analysis. For brevity I will focus on four critics of the secularisation thesis (Blumenberg 1985 [1976], Lasch 1991, Arendt 1994 [1953], Toscano 2010), and three critical arguments they make between them.

The first argument (we might call this ‘the literal argument’) is clearly articulated by Blumenberg, who objects there is ‘a formal, but for that very reason a manifest, difference’ between Christian eschatology and secular progress: the first looks forward to an end to history, imposed from beyond, while the second looks forward to an extension of worldly history into an indefinite future. ‘What signs are there that even suggest a likelihood that theological eschatology, with its idea of the “consummation” of history by its discontinuance, could have provided the model for an idea of the forward movement of history’ without end, he asks (Blumenberg 1985 [1976], p. 30). Lasch (1991, pp. 47–8) reiterates this argument, identifying the modern idea of ‘steady improvement with no foreseeable ending at all’ as that which represents the greatest of the ‘profound differences between the Christian view of history [...] and the modern conception of progress’.

A second argument (‘the substantialist argument’) is an objection to what Blumenberg describes (p. 29) as ‘historical substantialism’. The secularisation thesis depends on acknowledging that a change has taken place, that the secular world-view is different, in order to trace its features back to a theological original—and yet in admitting the reality of intellectual revolutions it shows that ideas are (p. 466) ‘incapable of this very permanence’ of identity it asserts. Either modernity is new or it is not, is the thrust of Blumenberg’s argument; if it is new then it can’t be theological, and if it is still theological then it should be impossible to talk about such a thing as secularisation. Or as

Blumenberg puts it: ‘To understand history as a result of history means that every phenomenon has to be traced back to what “was there all along”’ (Blumenberg 1985 [1976], pp. 470–1). His objection here is made both on methodological grounds, in that it can mean one is assuming in advance what one is going to find, and on normative grounds, as denying the legitimacy of the modern (whose essence, in Blumenberg’s eyes, is its very autonomy from the past). Blumenberg’s arguments may be said to prompt some overarching questions: How can we ever account for the original appearance of any ideas? If ideas may be thought of as substances, how were they created? And if we can always go back to what ‘was there all along’, how did that primary set of ideas get there in the first place?

A third argument (‘the genealogical argument’) objects to what it sees as the intrinsically tendentious nature of the attempt to identify intellectual influences over a *longue durée*. Such critique is often mounted where the secularisation thesis is used to find an archaic theological essence which has survived for centuries within apparently secular ideologies (not least within capitalism, or its Marxist alternative). Arendt, notably, wrote against such an interpretation, objecting that this said more about the social scientist, and the categories they sought to impose on political phenomena, than the phenomena themselves. If one went looking for resemblances between medieval religious and modern political movements, she argued, it would be easy enough to find them; but that would in itself say nothing about whether they were in any sense the same thing (Arendt 1994 [1953], p. 378). As well as seconding such critique of the idea of modern ‘political religions’, Toscano (2010) trains a related criticism on Agamben’s recent (2011) work on ‘economic theology’. Toscano objects to Agamben’s analysis of historical ‘signatures’, whereby merely textual resemblances are enough to jump two millennia between contemporary economic thought and early Christian theology (as well as the Greek philosophy which preceded it). As with Blumenberg’s critique his objection is two-fold, both methodological (tracing the essence of recent political movements to medieval theology representing an unjustifiably ‘bold short-circuit across the ages’ (p. 209)) and normative (arguing that politics is theology in disguise delegitimises the political itself, robbing it of any real concerns or power).

On the face of it these are strong criticisms—but further consideration shows that their greatest force is reserved for cruder versions of genealogy; that there are internal contradictions in their own alternative accounts; and that, overall, they do not pose a fatal

challenge to the version of the secularisation challenge I present in these chapters.

To start with the literal argument, the objections made by Blumenberg and Lasch miss out on two things. The first is that, as Löwith had recognised, Christian eschatology had in practice long recomposed itself, outside occasional millennial outbursts, into an expectation that the world would exist indefinitely—thus the supposed contrast between Christian and secular visions of the future is merely formal, not substantive. There is thus no insurmountable ideational barrier which might have made it impossible for Christian eschatology to morph into secular progress. As Löwith unequivocally put it (1949, p. 114), ‘the irreligion of progress is still a sort of religion, derived from the Christian faith in a future goal, though substituting an indefinite and immanent eschaton for a definite and transcendent one.’ The second objection is that, as evident from the likes of Brient and Gillespie, the idea of human history as endlessly unfolding into an unbounded future is itself entirely consistent with ideas of infinity derived from theological understandings of God: existence as an unending process can be understood as an immanentised conception of divine privative infinity. While there is of course a difference between an ontology in which infinity belongs only to the transcendental dimension, and one which sees the immanent as itself infinite, there is no unbridgeable gap between them: Brient’s *Immanence of the Infinite* is a book-length exposition of just how, in the early modern period, a concept of the infinite that was formerly reserved for a concept of God became transposed to that of the cosmos.

The literal argument and this counter to it are, we might say, of *indirect* relevance to my own presentation of growthism. My main focus in these final chapters is on linking growthist discourse with the metaphysics of the scientific revolution; I am not preoccupied with going back one step further, as with more established versions of the secularisation thesis, and seeking to demonstrate that the metaphysics of science are themselves transformed versions of medieval theology. While endorsing such core articulations of the secularisation thesis, that is not my focus; and thus my argument is not directly attacked by the likes of Blumenberg’s critiques. My argument as to the ongoing influence of early modern thought could be seen as being entirely compatible with Blumenberg and Lasch, in the sense in which they want to stress the novelty of the scientific world-view as being that which defines modernity as a separate and ongoing epoch, of ongoing

relevance to contemporary thought.⁸¹ Where the literal argument is of most relevance to my thesis is in my arguments as to why growthism seeks to defend modernity, why it matters to people: here I want to say not only that contemporary defences of growth are reflecting characteristically modern preoccupations, but that such preoccupations are fulfilling a job, in providing a sense of life's meaningfulness, that had formerly been provided, on a social basis, by theology. This is the sense of talking about a 'modern theodicy' of progress. In this sense, the rejoinder outlined above to the literal argument may usefully anticipate criticisms which point to literal differences between a theological concept of theodicy, revolving around the salvation of souls, and a progressive identification with a human collective advancing through future time. Literally, they *are* very different; yet not only are the existential jobs they do for people similar but, in the work of the likes of Briant and Gillespie, the process of intellectual transposition between one and the other has been suggestively mapped out.

Regarding the substantialist argument, these criticisms have some force; but are not the knockout blow they might at first appear. One might begin by asking: why should it be a case of either 'completely novel' or 'there all along': wouldn't it be perfectly possible to regard a world-view as being new, and yet marked by its relationship with a preceding world-view from which it was hatched? Here Blumenberg's objections can be turned back on him. The problem he faces is this: if the modern really is completely separate from the theological world-view, how did it come into being? Blumenberg asks us to imagine that out of a time in which religious devotion was so intense as to convulse Europe in a series of bloody wars, and after more than more than a millennium of established Christian worship, an entirely new way of seeing the world came into being *ex nihilo*, and without itself bearing a trace of theology. Surely Blumenberg's demands for the 'burden of proof' to fall on those advocating the secularisation thesis ought to be turned back on him, and with double force?⁸²

⁸¹ Thus Lasch (1991, pp. 47-8) writes (in terms which would support my treatment of growthism as being rooted in the metaphysics of modern science): 'The modern conception of history [... takes its] cue from science, at once the source of our material achievements and the model of cumulative, self-perpetuating inquiry, which guarantees its continuation precisely by its willingness to submit every advance to the risk of supersession.'

⁸² In practice, Blumenberg's own attempt to account for the emergence of modernity bears a remarkable resemblance to the substantialist theories he critiques. Blumenberg concedes that modernity cannot have popped into existence without any kind of philosophical hinterland, but seeks to get around his own critique of substantialism by suggesting that what remains constant over time is not the intellectual content of beliefs (the answers as to what the world is like) but their theoretical framing (the questions which drive our

The relevance of considering this substantialist argument here is principally in case it is remembered as a feature of Blumenberg's critique of the secularisation thesis; its main impact in this case might be to contribute to an impression that my own argument must share in the discredit which attaches to the secularisation thesis, to which it is related. The particular point of my discussion of the substantialist argument is to suggest that it never did discredit the secularisation thesis in the way its proponents suggested, and thus should not have force in this context either.

Finally, we come to the genealogical argument. These objections, again, have some obvious merit, but—perhaps because of the animus behind them (often a case of Marxists seeking to defend the legitimacy of socialism from sometimes crude attacks on it as a throwback to apocalyptic millenarianism)—they may also on occasion be overextended. Toscano's criticism of Agamben's ahistorical method articulates a strong version of the genealogical argument. Even here, though, a practice of looking only for textual resemblances across the epochs might still *imply* an intellectual history which can bridge the gap between them—especially given the centrality of Greek philosophy and Christian theology over centuries of intellectual development. To be sure, the detailed work of intellectual historians might still, in this case, be needed to challenge, substantiate, or amend such direct linkages between ancient and contemporary thought. But in other versions of the secularisation thesis—not least the development of the scientific revolution from theological concepts—such detailed intellectual history *is* available. As McKnight (1990) writes, subsequent to Blumenberg's debate with Löwith copious evidence was unearthed (e.g. focusing on the role of fifteenth century Neoplatonism and Hermeticism) for the evolution of the theological world-view into the modern. Gillespie (2008), whom I am drawing on extensively, provides a substantive example. Moreover, while critiquing such versions of genealogy as Agamben's for their ahistoricism, the version of genealogy appealed to instead—essentially that of Foucault, and defined by a 'commitment to [the principle of] discontinuity' (Toscano 2010, p. 228)—is itself marked by a methodological contradiction. Surely the very practice of genealogy assumes that ideas do not come into currency fully-formed, but rather have an historical development in which certain forms

search for the answers). In reality this concept of the theoretical frame plays the role of an enduring set of ideas that stamp modernity with the mark of its theological past: thanks to the overhanging frame of medieval theology, 'the idea of progress is [...] drawn into the function for consciousness that had been performed by the framework of the salvation story, with Creation at one end and Judgement at the other' (pp. 48-9). It is a nice distinction to suggest this does not identify the idea of progress as having been originally conceived in terms of Christian eschatology.

of continuity must be present through change?⁸³

In short, the well-known critiques of the secularisation thesis do pose a *challenge* to my practice over these two final chapters of drawing connections between features of contemporary growthist thought and the intellectual foundations of the modern world-view. However, it is far from a fatal one. First, while the challenge offered by these critiques to more celebrated versions of the secularisation thesis may have offered some valid criticisms, they have not, contrary to some impressions, scored a knockout blow: they have not discredited all attempts to work in this field in advance. Second, my practice of finding resonances across centuries of thought alludes to more detailed intellectual histories worked on by others, thus the credibility of my efforts is built partly on the authoritative scholarship of others. Third, my analysis is supported not only by intellectual history (which charts, as it were, the contingent influence of certain ideas) but by a theory of philosophical anthropology: my case is that theodicies are vitally important intellectual systems for society, and thus will be sustained by default in the absence of intellectual revolutions to replace them in a new form.

8.2 Growthist discourse as defence of a modern theodicy of progress

Understanding growthism as a defence of progress

In earlier chapters we have repeatedly encountered the framing of growthism (especially in its environmental-scepticism form) as a defence of progress. On the limitist side of debate, this has been seen most prominently by John Dryzek. In Chapter 3 we encountered Dryzek's presentation of the ideology of Prometheanism: this is something that has been hegemonic over the career of modernity, being identified with 'capitalism

⁸³ In practice, much like Blumenberg, Toscano's positive theory ends up articulating a version of the practice he is criticising. In Toscano's case he endorses the idea of a continuity across centuries, though in his historical materialist account 'it is not so much the continuity of the theological, but the persistence of certain social relations and their imaginaries which explains the endurance of certain concepts of government and forms of organization across such a *longue duree*' (p. 230). His objection can thus be seen to focus not so much on genealogy itself as on a purely intellectual approach to the history of ideas. In response to this, one might suggest that surely a balance between both approaches is required. Unless one can make room for the intellectual in its own right, and for the possibility of ideas in themselves as partly conditioning their own subsequent development, then changes in ideas (our ideational understanding of fundamental reality and where we stand in it) are inexplicable. How can historical materialism account for evolutions in world-views, if its only means of recognising intellectual change is by a change in social relations? The experiences of injustice may have persisted across the epochal threshold, and with it ideas of justice; but why were these ideas once expressed in religious and then in secular form?

and the Industrial revolution’, the ‘unbounded faith in the ability of humans to manipulate the world in ever more effective fashion’, and ‘human progress’ (2013, pp. 53, 64). While Dryzek’s presentation forms part of a distinctively elaborated theory of discourse analysis, its basic propositions are, as hinted at in Chapter 1, shared widely within limitist discourse. Just to remark on some of those usages explicitly featured in that literature review, there we heard that climate change ‘drives a dagger into the heart of the modern understanding of the human being, that of world-maker, the Enlightenment subject who creates the future of the world’ (Hamilton 2011, p. 38); and that environmental sceptics are ‘the rearguard of modernity’ (Jacques 2006), whose *raison d’être* is to ‘beat back the ontological threats to Western modernity’ (Jacques 2012, p. 11).

Such a presentation of growthist discourse is not confined to its limitist critics—Austen Williams, for instance, a writer attached to the Spiked collective, declaring: ‘One of the most important tasks today, is to undermine the fear-generating perception that human agency, modernity, growth, materialism, want, development, experimentation, technology, infrastructure, political debate and critical engagement—in a word, progress, is a problem’ (Williams 2008, p. 9). A manifesto produced by Daniel Ben-Ami, another Spiked writer, concludes that the solution to today’s social pessimism—in which economic growth is linked with ‘climate change and hyper-consumerism’—is to ‘rehabilitate progress’, fostering a ‘celebration of what humans have already achieved through modernity and a demand for more still.’ *Plus ultra*.

The infinite Universe

Chapter 7 made the case that a key feature of modern metaphysics is the infinitisation of the cosmos: in Koyré’s words (1991 [1957], p. 276), ‘The infinite Universe of the New Cosmology [is] infinite in Duration as well as in Extension’. While a foundational aspect of the modern world-view, this understanding of the cosmos has subsequently been contradicted by advances in physics: the laws of thermodynamics ‘reintroduced [...] finitude into the natural scientific picture of the cosmos’ (Tattersall 2014, p. 17), leading to much speculation in the later nineteenth and early twentieth centuries about the ultimate ‘heat death of the Universe’ (Kragh 2008). Following the development of thermodynamics, Einstein’s theory of relativity, and the acceptance of the idea of the Big

Bang, by the final quarter of the twentieth century it was established as scientific knowledge that the Universe was, in fact, finite, in both duration and extent.⁸⁴ Especially in the concept of entropy relating to the laws of thermodynamics, this understanding of the finitude of nature has been one of the main philosophical foundations for the limits thesis (e.g. Beard and Lozada 1999). Growthism, meanwhile, has been marked by a defence of the original scientific idea of the Universe as truly limitless.

As discussed in Chapter 5, at its most straightforward this has taken the form of attacks on the relevance of entropy for contemporary policy debates. Julian Simon, notably, has maintained that, ‘The concept of entropy simply doesn’t matter for human well-being’—his argument being that the Earth receives low entropy energy from the Sun, that it is billions of years until we have to worry about the Sun running out of energy, and that even after this we will be able to escape ‘to other planets, other galaxies, etc.’ (1996, p. 81). For Forster, similarly, the death of the Universe lies such a long time in the future as not to count in current debates on the environment: ‘Scientists aren’t sure whether it’s going to end in a heat death or in gravity pulling everything back together into some sort of conflagration or Big Crunch or whatever. But what they are clear is that if that does happen it’s going to be 40 billion years in the future [...] So there’s nothing happening in the twenty-first century because of the laws of physics’ (Forster 2018).

In Chapter 6, we came across attempts to extend this argument: to suggest that the Universe might turn out to be infinite after all. Simon draws attention to the speculative theories of Frank Tipler (‘the laws of physics as we currently understand them will permit exponential economic growth to continue *forever!*’ (1998, p. 2)) and Freeman Dyson (‘the laws of physics and information theory allow life to survive forever using a finite store of energy’ (1997, p. 171)) as contradicting environmentalists’ ‘arguments from physics that human existence is finite’ (1996, p. 81). In this context the ultimate fate of the Universe is seen to matter very much to contemporary debates: it is the principle of an immanent infinity which is being defended here, together with the prospect of an unbroken and unending future line of human life. This is a sentiment expressed clearly by Leigh Phillips in arguing for the necessity of pursuing ongoing technological progress precisely

⁸⁴ In discussing the relevance of the science of entropy to debates on the environment with me, Peter Forster related how: ‘A big change in my lifetime was the whole discovery of Big Bang cosmology. Everything came out of some mysterious event nearly 14 billion years ago, and that was only settled in the 1960s as a definite thing. Although one of the consequences of that is that the universe is finite. It’s not infinite, it’s finite, as a consequence of Einstein’ (Forster 2018).

in order to attain such an advanced ‘level of technology and understanding of reality that perhaps we can figure out a way to permit intelligence to escape the heat death of the universe’ (Phillips 2015, p. 261). For some, such worked-through speculations about the possibilities of (as it were) making the Universe infinite again appear either unnecessary, or to have already worked an influence on popular understanding: as Bastani (2019, p. 135) admiringly quotes the head of Jeff Bezos’s space exploration venture, ‘the universe is infinitely large’.

The intensive infinity of natural phenomena

In the last chapter we encountered Brient’s commentary on the secularisation thesis. There we focused on her argument that the modern idea of an immanent infinity should not only be understood as an extensive infinity (the infinitely big cosmos) but as also an intensive infinity (the things of the natural world possessing an interior infinity that can never be exhaustively known). This, Brient argues, reflects the immanentisation of the Neoplatonic concept of privative infinity (‘that which continues endlessly’), unfolding from the absolute infinity of God (the ‘inexhaustible source or wellspring of reality’, with ‘no end or limit to their bountiful giving’ (Brient 2002, p. 122)).

Echoes of these ideas can be widely found within growthist discourse. A pregnant—if idiosyncratic—example is offered by Richard D. North, who recalls a spiritual epiphany experienced as a young man. In this he

lived the ‘unbearable immanence of being’ of a blossoming spring day in a suburban road [...]. Every star and petal, every iceberg and molecule was known to me. I knew that I was a part of the universe, but caught sudden shattering glimpses of the way it had a spirit and that I—at any rate, humanity—represented the best of it. (North 2005, p. 284.)

North recalls this awakening in the context of discussing his sympathies with the work of the Catholic idealist Teilhard de Chardin—in particular the idea of the ‘noosphere’, an expanding cosmic force of collective human consciousness. In this case, at least, growthism is explicitly linked to a spiritual vision of nature which views all things as manifestations of the whole—with the knowing experience of this vision representing the key to humanity’s elevated position within the cosmos.

More commonly, as we encountered in Chapter 5, those who argue against the limits thesis often talk about the inexhaustibility of natural resources, as though these had interior depths that could never be plumbed. Simon, typically, argues that ‘natural resources [...] cannot be measured’, from which he draws ‘the logical conclusion: Natural resources are not finite’ (1996, p. 54).⁸⁵

More diffusely, the concept of privative infinity is central to growthism as reflected in its attachment to the rhetoric of indefinite, open-ended, endlessly creative growth. Science, knowledge, progress, and the human future are frequently depicted as being *unbounded*. Nordhaus and Shellenberger define ecomodernism as follows: ‘The new politics should have no utopia, no place, and no end. A politics of greatness demands that we aspire not to an end of history but rather to beginning new ones’ (Nordhaus and Shellenberger 2007, p. 256). For Austen Williams (2008, p. 5), progress means ‘*opening up* society to the *unfettered flow* of ideas and human ingenuity’ (emphasis added), thus opposed to an environmentalism that ‘nourishes only restraint’. The environmental sceptic Ian Plimer defends science (against religion) in these terms: ‘science thrives on the unknown and expands into the uncharted future’ (Plimer 1997, p. 17). Freeman Dyson distils these ideas into the title of his speculations on how humanity might evolve to survive the heat death of the Universe, *Infinite In All Directions* (Dyson 1988).

The rhetoric of privative infinity can be seen in concentrated form in Virginia Postrel’s defence of ‘the future’ against its enemies. For Postrel, as we saw in Chapter 6, the future is ‘an “infinite series”’ (1998, p. 59), ‘open-ended’, ‘a future that no [one...] can control or predict, a future too diverse and fluid for critics to comprehend’ (1998, p. 4). Her idea of progress, meanwhile, is ‘not the promise of a secular utopia that would bring history to a happy ending but the promise of steady improvement with no foreseeable ending at all’ (Postrel 1998, p. 58). May we not recognise here the idea of privative infinity being applied to the future progress of the human race, something which can never be known in advance because of its unceasing, overflowing creative life? Such an impression is only reinforced by considering Postrel’s remarks that ‘nature has no stopping point, no final shape. It is a process, not an end’ (1998, p. 152); and that those who believe in growth are ‘the party that fears no “abyss” in the unfolding future’ (1998, p.

⁸⁵ Often this line of argument is qualified to suggest that natural resources only become truly unending when mixed with the limitless quality of our minds; we will come to examples of this thought in the next subsection.

215). It is easy to read in Postrel the Neoplatonic idea of God—the ‘inexhaustible source or wellspring of reality’—becoming transferred to humanity, who through its powers of innovation knows that ‘By combinatorics on a few primitive elements, unbounded variety can be created’ (Postrel 1998, p. 65). As she puts it, the only real limits are on ‘the ways of combining objects or ideas’—but this is ‘a number of possibilities that makes the number of atoms in the universe look close to zero by comparison’ (Postrel 1998, p. 64). The future ‘reflects the plenitude of human life’ (1998, p. xiv), while life itself is ‘fluidity, variety, competition, adaptation, learning, improvement, evolution, and spontaneously emerging order’ (1998, p. 28). Life is thus unstoppable movement into the unforeseeable future, an endlessness deriving from the plenitude of humanity’s infinite diversity: truly, there is no end to our bountiful giving.

The fusion of limitless minds and scientific causation

For Descartes, as we saw in Chapter 7, God’s infinite intelligence is translated into the flow of causation operating through the infinite extension of nature; humans, meanwhile, have the potential, by following scientific method, to conjoin our minds with the infinite mind of God, and thus to bend causation to our wills—ultimately allowing us to ‘master nature utterly’ (Gillespie 2008, p. 205).

Within the discourse of growthism this set of ideas and images can be seen most directly in those, notably Freeman Dyson, who refer to ‘mind’ as a cosmic form of progress. As he writes: ‘Mind, through the long course of biological evolution, has established itself as a moving force in our little corner of the universe. Here on this small planet, mind has infiltrated matter and has taken control’ (Dyson 1988, p. 118).

More commonly, this mentality can be observed in the very widespread meditations on the limitless nature of imagination, and how this weightless, unbounded quality may be transferred (usually via the nexus of the market) onto natural resources. As referenced in Chapter 5, it is in the creation of economic products that the immaterial (thus unbounded) quality of minds is seen to mix itself with the material substratum of the physical world. Progress is viewed as simultaneously the increasing of mind’s control over matter, and matter’s taking on the limitless qualities of mind. Such sentiments as this are commonplace: humans have ‘limitless imaginations [that] can break through natural

limits' (Arnold 1996, p. 24); 'natural resources [...] are created by the intellect of man, an always renewable resource' (Wattenberg 1998); 'the physical world is not the defining limit upon economic growth: human ingenuity is' (Worstell 2010, p. 53); 'human ingenuity, the one resource that appears to be infinitely renewable and incapable of depletion' (Allaby 1995, p. 178); 'We [...] have an infinite capacity for ingenuity' (Phillips 2015, p. 259). Perhaps most influentially, this rhetoric was a centrepiece of the American presidency of Ronald Reagan, whose speeches were littered with sentiments such as: 'There are no such things as limits to growth, because there are no limits on the human capacity for intelligence, imagination, and wonder' (Reagan 1983). Or as he expanded on one occasion: 'More and more in this new economy, mind replaces matter, human invention makes physical resources obsolete' (Reagan 1988).

Crucial to this vision of ingenuity overcoming natural limits is the idea that we are literally increasing the scope of our minds over reality, such that the physical is becoming increasingly mental, the objective subjective, and the natural human. We have seen this suggested by such remarks as, 'In economic terms, the earth's resources seem to be becoming more plentiful' (Maddox 1972, p. 5), and 'non-renewable natural resources are actually growing because of economic progress' (Thurrow 1981, p. 112). Even more revealing are those remarks which suggest that natural resources are growing or shrinking on a moment-by-moment basis according to the state of the collective mind of the market—e.g. 'non-renewable resources supplies are expanding or contracting depending upon what is happening to relative prices' (Thurrow 1981, p. 112).

Julian Simon is an exemplar of such rhetoric. He emphasises the weightless quality of this mentally-infused world in writing: 'there is no meaningful physical limit—even the commonly mentioned weight of the earth—to our capacity to keep growing forever' (Simon 1996, p. 581). Natural resources 'are as unlimited as the number of thoughts a person might have' (Simon 1996, p. 583). He becomes particularly Cartesian in writing about natural resources as though these exist indefinitely, on an unbounded plane, and only become defined, 'finitised', in our imposing demarcations on them in the act of utilising them in economic production, or in surveying them for future use: 'the question of how much a resource is "really" in the Earth is like the question, "Is there a sound in the forest when a tree falls but no one is nearby to hear it?"' (1996, p. 42). Not only can finitude only be imposed on natural resources by human usage, but since we can expect future progress to mean we find new resources and use existing ones more and

more efficiently, then the finitude we impose will continuously be extended: ‘if we cannot state how to count the total amount of a resource that could be available in the future, it should not be considered finite’ (Simon 1996, p. 62). The finitude of nature is thus extended indefinitely as our knowledge and mastery of it increases without bound.

Instrumentalised within growthist rebuttals of the limits thesis, the idea of boundless ingenuity is easily blown up to resemble a kind of external soteriological force, humanity’s own guardian angel—extending out into the deepest future: ‘Our ingenuity keeps surprises to a minimum and suggests that we will surmount most of the events the prolonged death throes of this planet and galaxy may chuck at us’ (North 2005, p. 223).

Progress as theodicy

The last chapter outlined how the idea of progress could be understood as a form of theodicy which over the modern period increasingly displaced providence. The defining feature of this theodicy would be the following deal: that we were on our own (the very regularity of scientific laws denying the possibility of an interventionist God), but through scientific method (the knowledge of how to increase our knowledge, hence power) we would take care of our own fate. The evils of life would be eliminated progressively through our own collective endeavours.

Growthist discourse appears to show several aspects of this set of ideas. At its most basic, we find repeated statements to the effect that progress is real, and that belief in it defines modernity (or its frequent stand-ins, the West, or America). Reagan referred to his own presidency as the ‘years when Americans have restored their confidence and *tradition* of progress’ (Reagan 1985, emphasis added), suggesting a belief that the United States had been defined since its very founding by this faith. Certainly, Reagan’s definition of progress was highly politicised, coloured by the contemporary movement of neoliberal ideas which he had brought to power (‘Freedom and incentives unleash the drive and entrepreneurial genius that are the core of human progress’ (Reagan 1985)); this might lead an observer to question whether his words were a mere rhetorical flourish, rather than an indication of a genuinely long-standing cultural belief. This would be, though, to undervalue rhetorical flourishes. In Reagan’s case he conspicuously draws on a trope of America’s being built on a modern tradition of entrepreneurial inventiveness,

such as to bear everyone forwards on a wave of progress: this is a commonplace he expects to resonate with his audience. Its centrality in the national self-definition is what he is using, precisely in order to make the economic disruptions and insecurities attendant on neoliberal political economy seem consistent with American traditions. What is particularly instructive for us is the way in which he explicitly uses this trope of a ‘tradition of progress’ to oppose limitism:

[It’s] important to understand that this technological revolution is in a fundamental sense a moral revolution. At its heart is a rejection of the counsels of despair we heard so often in the seventies. Remember the seventies? [...] Worse than the statistics was a kind of collapse of faith. The West, in those years, experienced what can only be described as a crisis of confidence in its most fundamental values. [...] Expert opinion talked of limited resources in a shrinking world. In this future of scarcity, we were told, the free nations would have to sacrifice more and more of their economic and political freedoms and accept increasing government control.

But, as I said, the American people rejected this counsel of despair. They saw that the crisis was not in their values, but in the leadership that no longer believed in them. And they demanded a return to our basic principles -- those principles of freedom and enterprise that had always made this country great. (Reagan 1988.)

The theodical framing of progress⁸⁶ in such addresses is explicit, Reagan’s heralding a technological revolution that would encompass ‘new medical devices and methods of healing that could add years to your lives and even enable the halt to walk and the blind to see. Your generation stands on the verge of greater advances than humankind has ever known’ (Reagan 1983).

More widely, the idea that progress is an indisputable historical fact (defining the historical span of capitalism, the Enlightenment, or modernity)—or even more, that it is a quasi-scientific law of history—has a touchstone status within growthist discourse. As Chapter 5 evidenced, it is a commonplace within this discourse to suggest that ‘we will never run out of anything at all’ (Beckerman 1974, p. 232), and that ‘the common claim that we are “running out of resources”, [is] a prophecy *inevitably* contradicted [by the market]’ (Postrel 1998, p. 51, emphasis added). A main foundation for such confidence

⁸⁶ Consider also, as a more recent example, a case for neoliberal economics entitled *Heavens on Earth: How to Create Mass Prosperity* (Floru 2013). This seems a noteworthy example, given its utopian framing encompasses an admiring case-study on the legacy of Augusto Pinochet—‘Despite the human rights abuses’ (p. 203). The chasm which divides life under a repressive dictatorship from any concept of Heaven serves to underline the doctrinal faith being invested in this conception of progress.

within this literature is a long-term trend, reaching back into the nineteenth century, of declining prices for raw materials, even as their usage has rocketed (Barnett and Morse 1967). Within this discourse this industrial record is often mapped onto the entire history of civilisation ('we have to constantly keep focus on the fact that humanity has dealt with and overcome problems all through history' (Lomborg 2001, pp. 5, 290)). In its strongest form, it is treated as a universal law, based on 'the fact that each generation leaves a bit more true wealth—the resources to create material and nonmaterial goods—than the generation began with' (Simon 1996, p. 582). The ahistorical nature of such thinking might be seen as confusing the issue: could this really be the sign of an identification of progress with the epoch of modernity, if progress is seen as working throughout human history? In fact, we might see it as illustrating the opposite, being suggestive of a mentality which is defending its own (historically-produced) world-view as being the true guide to reality: such an attitude might tend towards universalising its own values, as opposed to regarding them as being the historicised aspects of a world-view as such.

Beyond such explicit affirmations of a faith in progress, and of its centrality in the career of modernity, it is also easy within this discourse to find expectations of the future which illustrate how this idea of progress is conceived. Again, at its simplest we find expressions of an endless advance into a utopian future—where 'unlimited knowledge' will 'drive endless improvements in human wellbeing and flourishing' (Liebreich 2018). More tellingly (especially as evinced by the writings on growthism as 'the party of life' discussed in Chapter 6), we can readily find illustrations of the specifically 'modern theodicy' in which mankind is responsible for its own fate. What we see in such illustrations is a repeated idea that it is human striving which is the motor of progress: 'The very nature of progress is overcoming—or striving to overcome—natural barriers' (Williams 2008, pp. 151-2). Future advance is both conceived of as inevitable and yet also presented as being conditional on *us*—we need to keep going, continually ploughing forwards into new territory, taking on new risks in order to overcome them and thereby expand human empire, cleaving hard throughout to the faith in the human ability to overcome all our problems. This dependence on continual striving, continual faith, can be seen in the repeated note of jeopardy which sounds throughout growthist attacks on limitism. If we lose faith in ourselves, then the modern theodicy will evaporate, and all will be lost: 'humans are an innovating species, and we are utterly committed for our

survival to an unending technological journey’ (Sarewitz 2011); ‘Progress and improvement are impossible without innovation and imagination. [...] We speculate or die’ (Leadbeater 2003, p. 353); ‘we must never stop reaching, never stop *progressing*’ (Phillips 2015, p. 259); ‘even a small decline in our rate of advance might be fatal to us’ (Hayek 2011 [1960], p. 53).

Fitting with this note of jeopardy is a sense of contrast between our heroic human ingenuity and the brutal, inhuman qualities of nature. ‘Man is not simply a passive victim of nature,’ Ben-Ami (2012, p. 144) stipulates, ‘but a creature with the capacity to improve his surroundings, reshaping the environment so that current and future generations can lead longer, healthier and more fulfilling lives.’ Even more:

Humanity has the unique capacity to make the environment, which in its ‘natural’ state can be devastatingly brutal, a better place to live in. Man has the ability to tackle disease, overcome natural disasters and eliminate scarcity. To the extent that these remain problems it is because humans have not gone far enough rather than because they have gone too far. (Ben-Ami 2012, pp. 145–6.)

Or again (p. 146): ‘Economic growth is a key factor in improving the environment’—which is to say, improving it *for* us, humanising nature, terraforming the world. He goes on:

Giving people more control over the soil, water and air can make the world a better place to live in. [...] We should aspire to increase human control over nature rather than reduce it. [...] The best thing we can do for our children is to struggle for a better and more productive world today. (Ben-Ami 2012, p. 146)

We struggle for control: the modern theodicy summed up.

The sense of a need for incessant striving, expanding, overcoming can be seen as growthism’s *idée fixe*. We can perhaps interpret it as a specifically human instantiation of privative infinity: our unbounded ingenuity has the potential to make our future unbounded, too, but only so long as we remain true to ourselves—which also means following the right methods of science and invention, enabling us to tap into some force, beyond the ken of any individual, which manifests itself in history. Hayek’s definition of progress, discussed in Chapter 6, appears particularly illuminating: progress is not only ‘the cumulative growth of knowledge and power over nature’, but ‘movement for movement’s sake’ (Hayek 2011, pp. 94–95). His vision of progress is one of literally

endless (in both senses) advance: this he both identifies with ‘life’ and contrasts with the closure he associates with the socialist vision of a utopian endstate.⁸⁷ Hayek’s vision of the future is one whose direction ‘no one can foretell’—since, as we saw, it is generated by a continuous process in which the ‘striving’ of individuals encounters ‘new problems [which] spring up all the time’ (Hayek 2011 [1960], p. 41). This seems to distil both the absolute indeterminability of privative infinity and the Baconian humiliation of the intellect—Bacon’s spiders, spinning webs out of themselves, here being those who think that, via state planning, they can determine the unknowable future in advance. This same defence of the boundless, unknowable possibilities of the future can be seen throughout the critiques of climate modelling, and the concomitant defence of ‘real, empirical’ science, discussed in Chapter 4.

Richard D. North provides an unusually explicit exposition of some elements (focusing on a more individualistic rather than collective vision) of the modern theodicy in his work. He is self-aware as to his own spiritual consciousness (‘there is a quality which we can call spiritual’), and to man’s need for meaning (‘We interpret everything as best we may, and we see opportunities for interpretation everywhere’) (North 2005, p. 205). But acknowledging that this is a secular age, he is clear that ‘the idea of a life and a "Life-giver" beyond the worldly is not real. For this sort of modern—I am one—there is nothing "transcendental" to be reached for’ (North 2005, p. 292). The synthesis he draws from these antagonistic positions is that: ‘In our time and for many of us if spirituality has any meaning it has to be a non-transcendental spirituality’ (North 2018, p. 25). This is also to say that: ‘We have to live, even when we aspire to spirituality, as *humans*’ (North 2018, p. 25, emphasis added); that is, in Promethean defiance of fate. He finds a non-transcendental spirituality in materialism:

orderliness and progressiveness have their own message about and to death: their cry is of defiance against the entropy we know is the underlying fate of our universe. So sometimes we buy something new, and love it for being ultra-modern, and should perhaps acknowledge (as when we smoke) that we are deliberately defying death [...] (North 2005, pp. 204–5)

Limitism is condemned from within this vision because it blocks man’s Promethean spirit, since ‘the *point* of being human is to tackle and take risks’ (North 2018, p. 25,

⁸⁷ We saw this echoed in Chapter 6 by North’s negative definition of his ‘manifesto for progress’: ‘I don’t believe there is some fabulous endpoint to the human enterprise’ (North 2018, p. 6).

emphasis added). Within this vision, not only is the ‘enterprise of human consciousness [...] inherently extremely risky’ (thus limitists invoking the precautionary principle are interfering with the human essence), but if this risk-taking ever did result in ‘a cataclysm, the most interesting aspect of creation, namely human consciousness, would go on’ (North 2018, p. 3). Our risk-taking, creative, death-defying spirit is inextinguishable, this suggests: this-worldly existence will never end.

Of all the growthist material discussed earlier, it is probably Freeman Dyson who offers the most dramatic, suggestive contributions to this current exposition. His advocacy of space exploration is primarily a matter of its offering mankind ‘the recovery of an open frontier’ (1969, p. 455). What else does ‘an open frontier’ signify but the idea of endless outward movement? A frontier marking a boundary, its being open suggests there is nothing final beyond it to hem us in; in turn meaning this is a boundary which is being continuously expanded, its preceding limits being endlessly transgressed.

Then there are Dyson’s speculations about how, through our ingenuity, we might survive even the death of the Universe:

After the protons are gone, we shall still have electrons and positrons and photons, and immaterial plasma may do as well as flesh and blood as a vehicle for the patterns of our thought. Perhaps the best possible universe is a universe of constant challenges, a universe in which survival is possible but not too easy. If optimism is the philosophy of people who welcome challenges, then we have plenty of reason to be optimists (Dyson 1988, pp. 111–12).

Here is the modern theodicy in essence—our condition is one of literally continual challenges, lasting beyond even the lifespan of matter itself; and scientific method, matched to the intensive infinity of nature, means both that there will always be more for us to discover, and that we will always be able to master it.

Or again, there is Dyson’s modern, progressive twist on the myth of Odysseus:

Homecoming is the reward for survival, but it is not the end of the story. There is no end, because homecoming means a new beginning. Homecoming means renewal and rebirth, a new generation growing up with new hopes and new ideals. Their achievements will redeem our failures; their survival will give meaning to our bewilderment (Dyson 1982, p. 144).

If the argument advanced here about the modern theodicy has validity, then this passage would appear to exemplify its ongoing relevance. What else does Dyson say but that we

as a human collective redeem ourselves; that our future is literally unending; and our collective survival the meaning of all existence?

8.3 Conclusion: bringing metaphysical sociology to bear

In this chapter we first considered critiques that have been made of the secularisation thesis (and which might, by extension, be thought of as applying to the attempt made in these final two chapters to link growthism to the theologically-inspired metaphysics of early modernity). In this treatment I attempted to show that these critiques have never succeeded in landing a knockout blow on celebrated examples of the secularisation thesis, and thus should not be thought of as having, as it were, discredited my own argument in advance. We next came to my attempt to use examples of growthist discourse—many of which had been laid out as part of the thematic exploration of growthism in earlier chapters—to illustrate the resemblance of its key preoccupations to the foundational ideas of modernity as set out in Chapter 7. What this presentation sought to suggest was that, in so vividly evoking those ideas, growthism is preoccupied with defending modernity itself against the threats posed by limitism, sensed as being antithetical to modernity's foundations.

This attempt, it ought to be conceded, does exhibit a somewhat impressionistic quality. We might see this as an inevitable product of compressing this reading of growthism so that it can be accommodated within the same thesis that has first sought to define this discourse, precisely so as to enable analysis of it. Ideally, of course, a genealogy of ideas would comprise more stages than a beginning (here, a metaphysical revolution occurring four or so centuries ago) and an end (a discourse produced over the past four or so decades). But in the absence of a book-length treatment that might span this passage of time (i.e. by identifying transmission belts in discourses from one generation to another), the persuasiveness of this account may, I'd like to suggest, be boosted by consideration of the philosophical-anthropological theory which I am advancing in this thesis.

As adumbrated in Chapter 2, I am drawn to a theory as to an innate human need for meaning which draws on the work of existential social scientists, and especially those (such as Zygmunt Bauman, Peter Berger, John Carroll, and Tim Jackson) who may be

identified under the banner of metaphysical sociology. The work of these analysts is marked by an interest in mortality, and the human quest for meaning in the face of it; for some within this field this leads to a theory by which societies require defining immortality ideologies, so as to sustain a sense of life's meaningfulness for its members. In Bauman's hands, especially, this field makes its own profound contribution to the secularisation thesis by identifying the historical development of certain immortality ideologies characteristic of secular modernity. These are forms of immortality belief which belong to the secular age (understanding that a traditional religious conception of immortality, the 'survival of the person in a hereafter', as Hans Jonas once put it, is at 'odds with the modern temper' (Jonas 1996 [1961], p. 118)). Bauman writes on how, within modern societies, masses of people have identified themselves with collectives such as the nation, their class, or the progressive future of mankind as a whole (2001, pp. 242-4).⁸⁸ Their imagined contribution to such collectives has formed an important sense of solace for many people's own personal consciousness of mortality.⁸⁹

Within the terms of this theory, it is easy to see how the limits thesis might provoke an emotional response from those who perceive it as contradicting the idea of progress. For what must this mean also but that, even collectively, mankind is limited, fallible, and mortal? The emotional dimensions of such a perception may be illuminated further by considering how the idea of a human collective, advancing through an expanse of future time, keys into an identification with the progressive career of mankind that is central to the idea of modern theodicy. To perceive that the frontier of the future may be closing—that endless advance is impossible—is to lose faith in humanity as being unbounded in duration and potential. No longer are we collectively capable of taking care of our own fate, and eliminating all the evils of the world in time. Within modernity, to think such things is to risk falling into a state of anomie. Even if one could not bring oneself to embrace such thinking oneself, the mere presence of such thinking among

⁸⁸ Blumenberg provides an additional perspective on characteristically modern immortality ideologies in writing about the rise of belief in Europe, beginning in the eighteenth century, in reincarnation. While this may not have been as central, socially, as the identification with collectives highlighted by Bauman, Blumenberg sees it as exhibiting the same qualities of unbounded, progressive movement: 'The repose of the dead in the finality of contemplation of the truth, which was part of the *status gloriae* for the Middle Ages, is transformed into a continuation of the movement of life, a striving from condition to condition, from star to star' (Blumenberg 1985 [1976], p. 424).

⁸⁹ Berger, similarly, has written on how 'the individual's own biographical misfortunes, including the final misfortune of having to die, are weakened at least in their anomic impact by being apprehended as only episodes in the continuing history of the collectivity with which the individual is identified (1990 [1967], p. 60)'.

others could pose uneasy questions about the foundations and future of the modern epoch. In the absence of a replacement theodicy which could make sense of the thought that progress is not infinite and that mankind will not live forever, there is a certain rationality involved in defending the foundations of modernity: this is to defend its legacy theodicy, which helps us to make sense of our lives and deaths within a secular age. Such an interpretation itself—it is offered here—makes sense of growthism.

Conclusion

In this Conclusion I return to the research questions I began with, and summarise how I have attempted to answer them in the preceding chapters. I then discuss a critical question which might arise in light of this review: Given this analysis of the failures of limitism, how have limitists themselves managed to embrace it? Lastly, I consider a final question about what I regard as the significant implications of the main argument laid out here: Given this preoccupation of this thesis with meaning, what is the meaning of this thesis?

Addressing the research questions we began with

We began this thesis with an observation. It is now around half a century since the rise of a new environmentalist perspective, one based on a belief that mankind is, on a global scale, exploiting the natural world in a dangerously unsustainable manner. Most famously encapsulated in the title of the 1972 report, *The Limits to Growth*, at the core of this perspective lies the ‘limits thesis’: a belief not only that, in a well-worn phrase, infinite growth on a finite planet is impossible, but that we should proactively limit our use of resources before nature does it for us. In this work I have described the discourse of those who seek to enact this thesis politically as ‘limitism’. In the Introduction I endorsed this limitist perspective, and affirmed the validity of its original insights: the evidence of dangerous human stresses on natural systems, not least the rising atmospheric concentrations of carbon dioxide, grows ever starker. And yet, as I observed, neither practically (in the form of controls to cap the overall exploitation of resources) nor intellectually (in the form of an explicit renunciation of the goal of indefinite growth) has established politics anywhere embraced the limitist principle at environmentalism’s heart.

The question I posed from this observation was simple: Why has limitism been a relative political failure over these past five decades? From within the limitist perspective this appears to be the profoundest mystery: in seemingly abandoning the principle of self-preservation, the state appears to be in the grip of irrationality.

In attempting to answer this question I have sought to answer another, more

circumscribed, question: why do limitism's explicit opponents (whom I have dubbed 'growthists') argue against it? What are they up to? How should one make sense of a discourse whose arguments are often shot through with self-contradiction, the most fantastic ideas, and a rejection of the intellectual authority of whole branches of science? In examining growthism I have not assumed that the influence of its rhetoric is directly responsible for persuading politics not to enact the limits thesis. Rather, my supposition has been that the opposition to limitism it expresses so vividly might show in relief reservations that might also be held by the public at large, albeit in more embryonic forms. In trying to make sense of growthism, therefore, I have sought to make sense of the overall failure of politics to embrace the limits thesis.

How have I gone about this work? This thesis has been organised into three parts. In the first, comprising Chapters 1 and 2, I established the disciplinary background and foundations for this study. In Chapter 1 I carried out a critical assessment of the relevant literature, covering established attempts (spanning political science, sociology, and psychology) to analyse the political failure of the limits thesis. In addition to establishing key contours of existing knowledge in these fields, my review highlighted an area which I identified as being far from settled (and thus offering an invitation to new research). While paying tribute to a great deal of highly insightful analysis, I detected a common limitation running through much of this established social science, whether in more mainstream or politically radical forms: a tendency to regard resistance to the limits thesis as the property of the 'other' (be that polluting corporations, capitalists, or demographic groups insecure about retaining their social status), rather than as a human response to an existential predicament. This led me in Chapter 2 to endorse a methodological model which inquires into what it is to be human, and foregrounds common human experiences in doing so. This I defined as a form of interpretive political science, drawing on the perspective of existential social science that sees humans as preoccupied with the search for meaning—most of all in the face of mortality. Ultimately, I sought to locate this perspective within a theory of philosophical anthropology, within which the human search for meaning is, at its most profound, a seeking after a connection with a metaphysical ground of being. I thus defined my project as examining growthism, not only to make sense of it, but to reveal something about the difficulties we may all have in making sense of the principle of limits to humanity's collective life.

The second part of this thesis spanned Chapters 3 to 6. These chapters comprised empirical analysis of growthist discourse, a discourse I defined as existing most centrally to defend ideas of progress against the challenges represented by the limits thesis. In these chapters I drew on a repertoire of related techniques which might all be grouped under the heading of communication studies—or, in a more philosophical register, hermeneutics. Each of these techniques featured a similar emphasis on attending closely to what growthist speakers are saying; with each, I sought to concentrate, not on what they were attacking, but on what they were defending, the ground on which they wished to take their stand. My aim in this was the hermeneutical one of understanding: what did they value, what did they believe in, why did they feel compelled to take up rhetorical arms?

Part Three, comprising Chapters 7 and 8, sought to interpret the picture of growthist thought produced in Part Two with reference to work done on the theological origins of the modern world-view, what has been called the ‘secularisation thesis’. Drawing on the work of both proponents and critics of the secularisation thesis, I identified a number of foundational features of a distinctively modern metaphysics, the crucial thread running through them being the ideational transference of infinity to the immanent world. With this came, as a secular creed to knit these metaphysics into an epoch-defining world-view, what I suggestively called the ‘modern theodicy’: the faith that mankind was taking responsibility for its own fate, and would progressively eliminate the ills of the world over time. This I identified with the idea of progress. I then went back over the empirical material excavated in Part Two, and found examples which seemed to demonstrate a preoccupation with defending these very metaphysics of an immanentised infinity, and the faith in progress to go with it.

This, then, is the answer suggested to that more circumscribed question we began with: growthism can be understood as a defence of the idea of progress, itself to be understood as symbolising an infinitisation of human life, knowledge, and power. This is the principle at the heart of growthism, the core concern which unites environmental sceptics, ecomodernists, and Promethean socialists, despite their differing political orientations and attitudes towards environmental science.

This interpretation of growthism helps also to reveal something about limitism that is crucial for providing an answer to the primary question we set out with. If

growthism stands for infinite life and endless challenges as a source of ongoing meaning, then—from within a modern, secular perspective—limitism trails connotations of death and meaninglessness. Something of this is suggested by Löwith’s remarks on the need, within an age defined by progress, for progress to be considered unending:

If some astronomer were to convince us that our planet would become uninhabitable in 2048, our progressiveness would lose its meaning; for why should we busy ourselves with producing better cars and better homes and better food and better health if time is running out and all betterment comes to the worst? (Löwith 1949, p. 112.)

If progressiveness loses its meaning, what meaning do we have left? Or as Sidney Pollard put it in the late 1960s, within a progressive age, ‘Today, the only possible alternative to belief in progress would be total despair’ (1968, p. 203).

Ultimately, this line of reasoning suggests, limitism has not been embraced by societies overall because, while it contradicts the modern theodicy, it does not offer a replacement for it. It asks us to live without a theodicy; without, that is, a sense of consolation for death, or of meaning in the face of chaos. Metaphysical sociology would say that to embrace this as a creed is asking too much of any social order, since our primary need from the social order is precisely to shelter us from such anomie.

How is limitism even possible?

As a first postscript to this gathering of the threads of this thesis, let me briefly consider an important query that might understandably be raised to this presentation: what support have I got for my assertion as to growthism’s reflecting, in more explicit form, a reservation about the limits thesis shared by society overall? This is a key element in my approach: it is what enables me to connect the answers I give to my more circumscribed and primary research questions. If growthists do not in some way reflect wider social concerns, then however penetrating the interpretation offered here it will only tell us about limitism’s explicit opposition, not its own lack of effective support.

To answer this point, I am relying here on theory, applied imaginatively. The theory I am taking from metaphysical sociology, supplemented by Blumenberg’s theodical theory of historical epochs: together, this work offers a strong implication that for a society to reject its dominant theodicy would be experienced by its members as a

profound crisis, to which they would naturally be averse. One might appreciate this better by trying to imagine what people's reactions might be were limitism to become political orthodoxy, and the state to begin to implement an official policy of permanent caps on the use of certain resources, and allied measures. My consideration is that growthism is distinguished by its imaginative grasp of this scenario, and reaction to it as though it were a dawning possibility. My supposition is that in the event that this scenario became reality, growthism's defence of the principle of progress would, absent a revolution in world-views, likely achieve an active resonance on a much wider scale.

A second—yet more potent—query might be to ask how it is, if limitism's premises are effectively too bleak to be embraced by society, that limitists themselves appear perfectly capable of entertaining them? How is limitism even possible; how could it first come to be thought? This is a potentially damaging challenge, not only to the applicability of my reading of growthism to wider society, but also to my reliance on metaphysical sociology throughout this thesis: if a sizeable group of people (i.e. limitist-environmentalists) are seemingly capable of rejecting the theodicy of progress, then it suggests that living in effect without some form of social theodicy *is* a possibility open to us all. Might this not imply that the stress I am taking from metaphysical sociology on the social need for a functioning theodicy is overblown? And if this is not such a pressing human need, might this not undermine the reading of growthism as being motivated precisely by a need to defend the theodical qualities of progress?

Such a line of inquiry would indeed represent a serious test, but there are a number of points that could be made in reply. Let us briefly consider two. To begin with, we might recognise that limitism does not represent a full rejection of progress or the immanentist metaphysics of modernity. In the extent to which its challenges to growthism are based on the modern institution of science, the limitist outlook remains within Taylor's immanent frame of secular modernity. In this sense, we might conjecture, limitists may enjoy a vestigial sense of the nomising functioning of modernity even if they consciously disavow it: for instance, in their adherence to environmental science, no matter the unpalatability of its results, might they not take a certain comfort from an idea of science, deep-rooted within modernity, as a methodological gateway to the truth?

In another sense, those most attuned to the naturalist methodologies of physical or social science might perhaps be so conditioned to see reality through the immanent

frame as not to be able to recognise their own need for a functioning theodicy. In Weber's analysis, the essence of the modern phenomenon of the 'disenchantment of the world' was the expectation that the cosmos itself should be rational; but this definition of rationality had collapsed under its own gravity, expelling from the Universe any sense of meaning *for* human beings, an expectation now considered *irrational* (Josephson-Storm 2017, p. 283). In this way, for the most rational, scientifically-minded, the world's not making sense would, in an underlying way, itself make sense: the scientific mind understands that existence as a whole is purposeless and humanity an accident of nature. So long as one retains a faith in science, one may retain a purchase on its original promise of metaphysical certainty, even if this is heavily disguised by its explicit tenets. Not expecting the world to make sense, one would thus be able to go quite far in mentally tearing down progress without any replacement faith at hand. Nor should one underestimate the role of ironic detachment as a means of sheltering those inhabiting this perspective from a sense of meaninglessness. This was, after all, Thomas Nagel's philosophical advice to his fellow intellectuals who, at the outset of limitist thought (1971), worried about 'the fact that all of mankind will eventually vanish without a trace' (p. 725). If 'there is no reason to believe that anything matters,' Nagel counselled (p. 727), 'then that doesn't matter either, and we can approach our absurd lives with irony instead of heroism or despair'.

To take another approach to this question, we might note that belief in progress cannot be maintained indefinitely in the face of mounting empirical contradictions to the idea of unending advance. Limitism may perhaps be distinguished as the belief of those for whom the contradictions to progress loom larger in their consciousness than the angst deriving from losing belief in a social theodicy. This would not invalidate a theory which posited a human need for such theodicies: however we may need them, they need a sufficient compatibility with our experience of the world in order to be believed in. If we follow Blumenberg's theory of history, theodicies do rise and fall: this itself implies that it is possible for society to collectively lose faith in one overarching theodicy, as it transfers belief to a new one. In the extent to which limitism is validated by ecological reality, perhaps we might see it as the herald of theodical change—if not quite the change itself.

The meaning of *The Meaning of Growth*

As a final word, let us reflect on the meaning of this thesis. What does it mean? This seems an appropriate question, given its own emphasis on the human preoccupation with meaning—though we might also want to ask, What do we mean by asking what a thesis means? Clearly, it means something more than asking what it *says*: this I have summarised earlier in this Conclusion. In answering these questions, I would want to reflect both on what its intended function is (what is it meant to do) and what it means for me (why I think I have written it).

Here I would like to recall my engagement with David Levy in Chapter 2. There I discussed how the nature of my topic—understanding the limits thesis to imply an existential threat to humanity—affected my approach to it. I revealed how in response to this situation I found myself personally engaged (out of concern for myself, my kids, and the world that I know), and how this meant I felt a simultaneous disengagement from the impersonal conventions of academic social science. As a result I felt drawn to Levy’s call for the development of a practical philosophy, by which a philosophical understanding of humanity’s place in the world is expressed in order to influence political arguments concerned to preserve society from existential danger. In this sense, the meaning of this thesis is to transform people’s understanding of the reasons for liberalism’s failures, and thereby to contribute to a practical politics which is better able to change this situation. Its purpose, in other words, is to change what it analyses, whether it achieves this or not.

How might its analysis change anything? Here, we might consider there to be a third level to that question about the meaning of this thesis: beyond its function and meaning to its author, there is its *message*, what its analysis implies. The logic of this analysis, drawing on Blumenberg’s theodical theory of history, is that if progress is faltering as a social theodicy (and scientific knowledge of the finitude of the Universe at variance with the original metaphysics of modernity), then the time is at hand for epochal transition, and that crucial to this is the search for a new theodicy. There are some clues, I would suggest, as to what this might mean in the work of those philosophers I have explicitly drawn on for my philosophical anthropology—those such as Eric Voegelin, Hans Jonas, David Levy, and Charles Taylor, who talk about the reality of a metaphysical dimension, and thus point to a reality beyond the immanent frame. The essence of a theodicy developed from such a vision would lie in the sense of connection with a reality of timeless order beyond human making or unmaking. Without such connection, Taylor suggests, ‘It’s not clear what ongoing reality we can latch on to’, and when reminded of

mortality we are left with ‘a sense of void [...] and of deep embarrassment’ (Taylor 2007, pp. 722-3).

One does not need to appreciate this gesture towards metaphysics to value the foregoing analysis in this thesis; that stands on its own merits. But all the same, being open towards this message may add to the interpretive plausibility of that analysis. As Voegelin observed (1987 [1952], p. 167), the self-identity of modernity is as the final realm, an epoch that has come into being but will have no end: in that sense it does not recognise itself as an epoch at all, but as reality. To consider even the possibility of an epochal succession to modernity helps to overcome this prejudice towards the present, lending plausibility to a critical analysis of one’s own epoch as being such.

Lastly, the metaphysical message delivered at the end of this thesis serves to indicate something about the spirit in which its analysis has been written. For while this thesis has been a work of academic social science it has also, in its use of philosophical anthropology, been in a certain tension with what Taylor calls the ‘spin of closure which is hegemonic in the Academy’ (2007, p. 549)—in other words, an institutional bias towards an immanentist picture of reality. From within such an outlook, it stands to reason, it is intrinsically difficult to analyse problems that flow from such an immanentist outlook itself. In aspiring to bring to bear an applied form of Taylorian philosophical anthropology on my research problem, and in so doing producing an analysis with a spin of openness to metaphysics, I have aimed not only to choose a model of inquiry that seems persuasive to me, but one that seems most appropriate for this topic.

Appendix

Table 3: Initial selection of texts analysed in this research

Author	Date of publication	Text	Rationale for selection
Ron Arnold	1996	Overcoming Ideology (article)	Prominently referred to as example of environmental scepticism in Rowell (1996). Other works included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008).
Wilfred Beckerman	1974	<i>In Defence of Economic Growth</i> (book)	Widely identified as one of the earliest attacks on the <i>Limits to Growth</i> report. Other works included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008).
	2001	<i>Justice, Posterity, and the Environment</i> (with Joanna Pasek) (book)	To read a more recent work by Beckerman, to see if his arguments were consistent with those from the early

			1970s (they were).
Freeman Dyson	1988	<i>Infinite In All Directions</i> (book)	Prominent environmental sceptic (DeSmog 2019c). Particularly interesting given his intellectual status as a renowned scientist. This book used as a supporting pillar in the arguments of Simon (1996).
	1996	The Scientist As Rebel (article)	To focus in particular on Dyson's views of science and scientists.
	1998	Science as a Craft Industry (article)	
	2006	<i>Heretical thoughts about science and society</i> (book)	
Clive James	2017	Mass death dies hard (pamphlet)	Published by the environmental sceptic UK think tank, the Global Warming Policy Foundation (GWPF). Notable because of James's public persona, where his literary qualities and political sensitivities suggest him as a more unusual

			example of an environmental sceptic.
Nigel Lawson	2008	<i>An Appeal to Reason: A Cool Look at Global Warming</i> (book)	Prominent environmental sceptic (DeSmog 2020b); founder of the GWPF. Notable because of career as senior politician.
Bjørn Lomborg	2001	<i>The Skeptical Environmentalist: Measuring the Real State of the World</i> (book)	Prominent environmental sceptic (DeSmog 2019b). Included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008). Notable for self-identification as continuing the work of Julian Simon, thereby evidencing continuity of environmental sceptic arguments over a span of decades.
John Maddox	1972	<i>The Doomsday Syndrome</i> (book)	Included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008). Noteworthy because such an early example of environmental scepticism, and

			because of the scientific standing of the author, as editor of <i>Nature</i> .
Herbert Meyer	1979	<i>The War Against Progress</i> (book)	Included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008). Noteworthy because of the sentiment expressed directly in the title.
Patrick Moore	2013	<i>Confessions of a Greenpeace Dropout: The Making of a Sensible Environmentalist</i> (book)	Prominent environmental sceptic (DeSmog 2020c).
Ted Nordhaus and Michael Shellenberger	2007	<i>Break Through: Why We Can't Leave Saving the Planet to Environmentalists</i> (book)	Prominent ecomodernists (founders of the Breakthrough Institute).
Richard D. North	2005	<i>Rich Is Beautiful</i> (book)	Acknowledged as an environmental sceptic (Climate Denier List 2012). Other works included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008). Noteworthy in particular because of previous career as

			environmental campaigner and then environmental journalist.
Benny Peiser	2017	Interview with Benny Peiser (interview, by Roger Harrabin)	Prominent environmental sceptic (DeSmog 2020d); Director of the GWPF.
Leigh Phillips	2015	<i>Austerity Ecology and the Collapse Porn Addicts: A Defence of Growth, Progress, Industry and Stuff</i> (book)	Noteworthy because critical of limitist environmentalism from a socialist perspective.
Virginia Postrel	1998	<i>The Future and Its Enemies: The Growing Conflict Over Creativity, Enterprise, and Progress</i> (book)	Prominent writer and editor of environmental sceptic texts, as editor of <i>Reason</i> magazine, 1989 to 2000.
Ronald Reagan	1983	Remarks at Convocation Ceremonies at the University of South Carolina in Columbia (speech)	Very prominent as articulator of environmental sceptic arguments while American president. Speeches selected after searching for the terms
	1984	Remarks at a Reagan-Bush Rally in San Diego, California (speech)	

	1985	Second Inaugural Address (speech)	‘limits’ or ‘growth’.
	1988	Remarks and a Question-and-Answer Session With Members of the City Club of Cleveland, Ohio (speech)	
Matt Ridley	2010	<i>The Rational Optimist: How prosperity evolves</i> (book)	Prominent environmental sceptic (DeSmog 2020e). Other works included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008).
Julian Simon	1996	<i>The Ultimate Resource 2</i> (book)	Prominent environmental sceptic. Included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008). Cited by Lomborg (2001) as inspiration for his own environmental scepticism.
Matt Sinclair	2011	<i>Let Them Eat Carbon: The Price of Failing Climate Change Policies, and How Governments and Big Business Profit From Them</i>	Environmental sceptic writer; recommended (as providing contemporary example of environmentally

		(book)	sceptical thought in the UK) by a friend.
Philip Stott	2003	You can't control the climate: reducing carbon emissions in the hope this will stop global warming is a flawed idea (article)	Prominent environmental sceptic. Other works included in a list of environmental sceptic texts in Jacques <i>et al.</i> (2008).

Table 4: Individuals interviewed as part of this research

Interviewee / Relevant professional standing	Date interviewed	Interviewed for their perspectives gained from...
Dr Sonja Boehmer-Christiansen Emeritus Reader in Geography, University of Hull; former editor, <i>Energy and Environment</i>	17/04/18	Engagement with environmental debate, particularly as editor of the journal <i>Energy and Environment</i> , during which time it published articles with an environmentally sceptical position.
The Rt Rev Peter Forster The Lord Bishop of Chester (retired 2019); member of the Global Warming Policy Foundation Board of Trustees	11/07/18	Writing on environmental debate, and association with the environmentally sceptic Global Warming Policy Foundation.
Mark Lynas Author (e.g. Lynas 2007, 2012)	19/01/18	Campaigning for action on climate change, and writing on environmental debate and in defence of progress.

Richard D. North Author (e.g. North 2005)	16/11/18	Experience as an environmental journalist, and as author of books, reports, and essays which take a more sceptical approach to environmentalism.
Leigh Phillips Author (e.g. Phillips 2015)	01/03/19	Writing on environmental debate, and in support of a socialist form of growth.
Tim Worstall Senior Fellow at the Adam Smith Institute; Author (e.g. Worstall 2010)	29/01/19	Writing on economics and the environment.
Keith Allott Director, Power Transition Initiative, European Climate Foundation	17/07/18	Experience working for environmental NGOs and as an environmental journalist.
Professor Kevin Anderson Professor of Energy and Climate Change in the School of Engineering at the University of Manchester	28/02/19	Experience in engineering, as a former Director of the Tyndall Centre for Climate Change Research, and as an academic researcher on energy and climate change.
Professor Kevin	10/04/18	Experience in research and collaboration within international forums on delivering inclusive and

Chika Urama Senior Director, African Development Institute, African Development Bank Group		green growth
Tom Burke Co-founding Director and Chairman, E3G	15/02/19	Experience working with environmental NGOs, government ministers, and major companies.
Ruth Davis Deputy Director, Policy, RSPB	13/12/18	Experience working with environmental NGOs, and as a writer on the philosophy, politics, and practice of environmentalism.
Professor Paul Ekins Professor of Resources and Environmental Policy, Director, UCL Sustainable Resources Institute, University College London	30/01/18	Experience as academic researcher, author, and government and international adviser on environmental sustainability.
David Fell Director and co- founder, Brook	05/04/18	Social science research into public engagement with sustainability, research into ecological economics, and advice to government bodies.

Lyndhurst, sustainability consultancy		
Claire Foster- Gilbert Director, Westminster Abbey Institute	29/03/18	Thought on religious engagement with environmentalism, focusing especially on the work of the Church of England.
Tim Jackson Professor of Sustainable Development, University of Surrey; Director, the UK Centre for the Understanding of Sustainable Prosperity (CUSP); and author (e.g. Jackson 2017)	14/05/18	Academic research into ecological economics, environmental sociology, and theodicy and consumerism; and experience as a government adviser.
Henry Leveson- Gower Founder and CEO of Promotion Economic Pluralism; Editor of The Mint Magazine	11/05/18	Work within the field of sustainability economics, as an environmental specialist within government, and as a political campaigner.
Professor Rupert	02/08/18	Philosophical engagement with environmental

<p>Read</p> <p>Associate Professor of Philosophy, University of East Anglia</p>		<p>themes, and experience within Green politics.</p>
<p>Professor Julia Steinberger</p> <p>Professor of Social Ecology & Ecological Economics, University of Leeds</p>	<p>10/05/19</p>	<p>Academic research into requirements of an environmentally sustainable society, and from observations of those who campaign and lobby against environmental science and policy.</p>
<p>Dr Derek Wall</p> <p>Lecturer, Politics and International Relations Department, Goldsmiths, University of London</p>	<p>09/10/18</p>	<p>Research in green economics, and participation in Green politics.</p>
<p>Dr Chris Weaver</p> <p>Climate scientist, United States Environmental Protection Agency; former Acting Director of the U.S. Global Change</p>	<p>18/03/19</p>	<p>Work on the intersection between environmental science, public policy-making, and political debate.</p>

<p>Research Program and Senior Advisor in the White House Office of Science and Technology Policy</p>		
<p>NOTES</p> <ol style="list-style-type: none"> 1. In all cases respondents were interviewed in their personal capacity. 2. Only six interviews were directly cited: Sonja Boehmer-Christiansen, the Rt Rev Peter Forster, Mark Lynas, Richard D. North, Leigh Phillips, and Tim Worstall. In a further case, Tim Jackson, an interviewee's published texts were cited, but not the interviews. Even where interviews were not directly cited, all were highly valuable in helping to shape the broader analysis of environmental debate contained in Chapter 3. 3. Leigh Philips and Tim Worstall responded to my interview questions in writing. These were thus not strictly interviews, in that they did not feature the impromptu back-and-forth elements of a live conversation. Nevertheless, they were interview-like, in that both respondents were replying to a list of written questions which I would have planned to ask in a live interview. 		

Bibliography

- Abbey, R., 2000. *Charles Taylor*. Teddington: Acumen Publishing.
- Adams, M., 2015. Apocalypse when? (Not) thinking and talking about climate change [online]. *Discover Society*. Available from: <http://discoversociety.org/2015/03/01/apocalypse-when-not-thinking-and-talking-about-climate-change/> [Accessed 25 Mar 2017].
- Agamben, G., 2011. *The Kingdom and the Glory: For a Theological Genealogy of Economy and Government*. Stanford, Calif.: Stanford University Press.
- Albrecht, D.E., 1982. The New Ecological Paradigm: an exploration into the nature and correlates of Iowan's environmental orientations. PhD. Iowa State University, Ames.
- Aligica, P.D., 2009. Julian Simon and the "Limits to Growth" Neo-Malthusianism. *The Electronic Journal of Sustainable Development*, 1 (3), 49.
- Allaby, M., 1995. *Facing the Future: The Case for Science*. London: Bloomsbury.
- Anderegg, W.R.L., Prall, J.W., Harold, J., and Schneider, S.H., 2010. Expert credibility in climate change. *Proceedings of the National Academy of Sciences*, 107 (27), 12107–12109.
- Angus, I., 2017. Memo to Jacobin: Ecomodernism is not ecosocialism. *Climate and Capitalism*.
- Anshelm, J. and Hultman, M., 2014a. A green fatwā? Climate change as a threat to the masculinity of industrial modernity. *NORMA*, 9 (2), 84–96.
- Anshelm, J. and Hultman, M., 2014b. A green fatwā? Climate change as a threat to the masculinity of industrial modernity. *NORMA*, 9 (2), 84–96.
- Arendt, H., 1994. Religion and Politics. In: *Essays in Understanding, 1930-1954: Formation, Exile, and Totalitarianism*. New York: Schocken Books, 368–390.
- Arnold, R., 1996. Overcoming Ideology. In: P.D. Brick and R.M. Cawley, eds. *A Wolf in the Garden: The Land Rights Movement and the New Environmental Debate*. London: Rowman & Littlefield, 15–25.
- Aron, R., 1957. *The Opium of the Intellectuals*. London: Secker & Warburg.
- Asafu-Adjaye, J., Blomquist, L., Brand, S., Brook, B.W., Defries, R., Ellis, E., Foreman, C., Keith, D., Lewis, M., Lynas, M., Nordhaus, T., Pielke, R., Pritzker, R., Roy, J., Sagoff, M., Shellenberger, M., Stone, R., and Teague, P., 2015. An ecomodernist manifesto. *Ecomodernism.org*.
- Asayama, S., Bellamy, R., Geden, O., Pearce, W., and Hulme, M., 2019. Why setting a climate deadline is dangerous. *Nature Climate Change*, 9 (8), 570–572.
- Babe, R.E. and Babe, R., 2006. *Culture of Ecology: Reconciling Economics and Environment*. University of Toronto Press.
- Bacon, F., 1980. *The Great Instauration and New Atlantis*. Arlington Heights: Harlan Davidson.
- Bacon, F., 2008. *Francis Bacon: The New Organon*. New edn. Cambridge: Cambridge University Press.
- Bacon, F., 2009. *The New Atlantis*. Portland, OR: The Floating Press.
- Bailey, R., 1993. *Eco-Scam: The False Prophets of Ecological Apocalypse*. New York: St Martins Press.
- Bailey, R., 2012. The Limits of The Limits to Growth. *Reason*.
- Bailey, R., 2018. Unlimited Growth and Climate Change Economists Win Nobel Prize - Hit & Run [online]. *Reason.com*. Available from: <https://reason.com/blog/2018/10/08/unlimited-growth-and-climate-change-econ>

[Accessed 15 Nov 2018].

- Baird, C.W., 1991. What garbage crisis? *The Freeman*, 41 (6), 204–207.
- Bardi, U., 2011. *The Limits to Growth Revisited*. London: Springer.
- Barnett, H.J. and Morse, C., 1967. *Scarcity and Growth: The Economics of Natural Resource Availability*. Baltimore: Johns Hopkins Press.
- Barry, J., 1999. *Rethinking green politics: nature, virtue, and progress*. London: SAGE.
- Barry, J., 2007. Review of *The Politics of the Earth: Environmental Discourses*. *Environmental Values*, 16 (2), 269–272.
- Barry, J. and Eckersley, R., 2005. W(h)ither the Green State? In: J. Barry and R. Eckersley, eds. *The State and the Global Ecological Crisis*. London: MIT Press, 255–272.
- Bartlett, A., 2012. Reflections on Sustainability and Population Growth. In: P. Cafaro and E. Crist, eds. *Life on the Brink: Environmentalists Confront Overpopulation*. Athens: University of Georgia Press, 29–40.
- Bastani, A., 2019. *Fully Automated Luxury Communism: A Manifesto*. London: Verso.
- Bastani, A., 2020. 20 Books To Read While in Self-Isolation. *Fully Automated Luxury Communism*.
- Bastardi, J., 2019. Climate strike or just cutting class? *CFACT*.
- Bauman, Z., 1978. *Hermeneutics and Social Science: Approaches to understanding*. London: Hutchinson.
- Bauman, Z., 1992. *Mortality, Immortality and Other Life Strategies*. First Edition edition. Cambridge, UK: Polity.
- Bauman, Z., 2001. *The Individualized Society*. Cambridge: Polity.
- Baumeister, R.F. and Newman, L.S., 1994. How stories make sense of personal experiences: Motives that shape autobiographical narratives. *Personality and Social Psychology Bulletin*, 20 (6), 676–690.
- Beard, T.R. and Lozada, G.A., 1999. *Economics, Entropy and the Environment: The Extraordinary Economics of Nicholas Georgescu-Roegen*. Cheltenham: Edward Elgar.
- Beck, U., 1992. *Risk society: towards a new modernity*. London: Sage.
- Becker, C.L., 1970. *The Heavenly City of the Eighteenth-Century Philosophers*. New Haven: Yale University Press.
- Becker, E., 1972. *The Birth and Death of Meaning*. 2nd ed. Harmondsworth: Penguin.
- Becker, E., 1973. *The Denial of Death*. London: The Free Press.
- Becker, E., 1975. *Escape From Evil*. New York: Free Press.
- Beckerman, W., 1974. *In Defence of Economic Growth*. London: Jonathan Cape.
- Beckerman, W. and Pasek, J., 2001. *Justice, Posterity, and the Environment*. Oxford: Oxford University Press.
- Beder, S., 2001. Research note - Neoliberal Think Tanks and Free Market Environmentalism. *Environmental Politics*, 10 (2), 128–133.
- Beder, S., 2011. Skeptical environmentalism. In: H. Schiffman, ed. *Green Issues and Debates: An A-to-Z Guide*. Thousand Oaks, California: Sage, 423–427.
- Ben-Ami, D., 2012. *Ferraris For All: In defence of economic progress*. Bristol: Policy Press.
- Benjamin, A. and Malpas, J., 2017. Special Issue – Rethinking Philosophical Anthropology. *International Journal of Philosophical Studies*, 25 (3), 317–319.
- Benjamin, J.A., 1993. *Progress and the Quest for Meaning: A Philosophical and Historical Inquiry*. London: Associated University Press.
- Benjamin, W., 1996. *Walter Benjamin: Selected Writings, 1: 1913–1926*. Cambridge, Mass: Harvard University Press.

- Berger, P.L., 1990. *Sacred Canopy: Elements of a Sociological Theory of Religion*. New York: Anchor Books.
- Berger, P.L., 1999. *The Desecularization of the World: Resurgent Religion and World Politics*. Wm. B. Eerdmans Publishing.
- Berger, P.L. and Luckman, T., 1967. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Harmondsworth: Penguin.
- van den Bergh, J.C.J.M., 2010. An assessment of Lomborg's The Skeptical Environmentalist and the ensuing debate. *Journal of Integrative Environmental Sciences*, 7 (1), 23–52.
- Bergh, J.C.J.M. van den, 2010. An assessment of Lomborg's The Skeptical Environmentalist and the ensuing debate. *Journal of Integrative Environmental Sciences*, 7 (1), 23–52.
- Berman, M., 1999. *Adventures in Marxism*. London: Verso.
- Berry, A., 1974. *The Next Ten Thousand Years: A Vision of Man's Future in the Universe*. Saturday Review Press/Dutton.
- Berry, A., 2000. *The giant leap: mankind heads for the stars*. Rev. ed. London: Headline.
- Berry, C.P., 2008. *Political economy and ideational analysis: towards a political theory of agency*. International Political Economy Group, No. 36.
- Bevir, M. and Blakely, J., 2018. *Interpretive Social Science: An Anti-Naturalist Approach*. Oxford: Oxford University Press.
- Bevir, M. and R. A. W Rhodes, 2003. *Interpreting British governance / Mark Bevir and R.A.W. Rhodes*. London: Routledge.
- Bhambra, G., 2007. *Rethinking Modernity: Postcolonialism and the Sociological Imagination*. Basingstoke: Springer.
- Bidwell, M., 2018. 'Out of the Wreckage: 'A new politics for an age of crisis' by George Monbiot. *green-thinkers*.
- Billig, M., 1993. Psychology, Rhetoric and Cognition. In: R. Rhodes and J. Good, eds. *The Recovery of Rhetoric: Persuasive Discourse and Disciplinarity in the Human Sciences*. London: Bristol Classical Press, 119–136.
- Bitzer, L.F., 1968. The Rhetorical Situation. *Philosophy & Rhetoric*, 1 (1), 1–14.
- Björnberg, K.E., Karlsson, M., Gilek, M., and Hansson, S.O., 2017. Climate and environmental science denial : A review of the scientific literature published in 1990–2015. *Journal of Cleaner Production*, 167, 229–241.
- Black, R., 2018. *Denied: The rise and fall of climate contrarianism*. The Real Press.
- Blakely, J., 2016. *Alasdair MacIntyre, Charles Taylor, and the Demise of Naturalism: Reunifying Political Theory and Social Science*. Notre Dame, Indiana: University of Notre Dame Press.
- Blanning, T., 2012. *The Romantic Revolution: A History*. Reprint edition. New York: Modern Library.
- Blumenberg, H., 1985. *The Legitimacy of the Modern Age*. 2nd rev edn. Cambridge, Mass: MIT Press.
- Boehmer-Christiansen, S., 2018. Interview with Sonja Boehmer-Christiansen. Interviewed by Richard Douglas, 17 Apr.
- Boer, R., 2013. *In the Vale of Tears: On Marxism and Theology*, 5. Boston: Brill.
- Boltanski, L. and Chiapello, E., 1999. *The New Spirit of Capitalism*. London: Verso.
- Boltanski, L. and Thévenot, L., 2006. *On Justification: Economies of Worth*. Oxford: Princeton University Press.
- Bookchin, M., 1995. *The philosophy of social ecology: essays on dialectical naturalism*. 2nd ed. London: Black Rose.

- Booth, W.C., 2004. *The Rhetoric of Rhetoric: The Quest for Effective Communication*. Oxford: Blackwell.
- Borsari, A., 2009. Notes on “Philosophical Anthropology” in Germany. An Introduction. *IRIS*, 1 (1), 113–129.
- Bort, J., 2019. Jeff Bezos Says We Need to Colonise The Moon to ‘Save Earth’. *Science Alert*.
- Boykoff, M.T. and Olson, S.K., 2013. ‘Wise contrarians’: a keystone species in contemporary climate science, politics and policy. *Celebrity Studies*, 4 (3), 276–291.
- Brand, S., 1968. Purpose. *Whole Earth Catalog*, (Fall), 3.
- Brand, S., 2010. *Whole Earth Discipline*. London: Atlantic Books.
- Breakthrough Institute, 2012. History [online]. *The Breakthrough Institute*. Available from: <https://thebreakthrough.org/articles/history> [Accessed 10 Nov 2020].
- Breakthrough Institute, 2019. The Best of Breakthrough 2019 [online]. *The Breakthrough*. Available from: <https://thebreakthrough.org/articles/2019-best> [Accessed 1 Mar 2020].
- Brick, P., 1995. Determined Opposition: The Wise Use Movement Challenges Environmentalism. *Environment: Science and Policy for Sustainable Development*, 37, 17–42.
- Brient, E., 2002. *The Immanence of the Infinite: Hans Blumenberg and the Threshold to Modernity*. Washington, D.C.: Catholic University of America Press.
- Brisman, A., 2012. The cultural silence of climate change contrarianism. In: R. White, ed. *Climate Change from a Criminological Perspective*. New York: Springer-Verlag, 41–70.
- Brookes, W.T., 1982. *The Economy in Mind*. New York: Universe Books.
- Brower, K., 2010. The Danger of Cosmic Genius [online]. *The Atlantic*. Available from: <https://www.theatlantic.com/magazine/archive/2010/12/the-danger-of-cosmic-genius/308306/> [Accessed 4 May 2019].
- Brown, R.L. and Herndl, C.G., 1996. Beyond the Realm of Reason: Understanding the Extreme Environmental Rhetoric of the John Birch Society: Rhetorical Analyses of Environmental Discourse. In: R.L. Brown and C.G. Herndl, eds. *Green Culture: Rhetorical Analyses of Environmental Discourse*. Madison: University of Wisconsin Press, 213–235.
- Buber, M., 1945. The Philosophical Anthropology of Max Scheler. *Philosophy and Phenomenological Research*, 6 (2), 307.
- Bultmann, R.K., 1957. *The presence of eternity: history and eschatology*. New York: Harper and Brothers.
- Burkett, P., 1999. *Marx and Nature: A Red and Green Perspective*. New York: St. Martin’s Press.
- Burleigh, M., 2006. *Sacred Causes: Religion And Politics From The European Dictators To Al Qaeda*. First Edition First Printing edition. London: HarperPress.
- Bury, J.B., 1987. *The Idea of Progress: An Inquiry Into Its Origin and Growth*. London: Courier Corporation.
- Butler, J., Habermas, J., Taylor, C., and West, C., 2011. *The Power of Religion in the Public Sphere*. Columbia University Press.
- Buttel, F.H., 1978. Economic Growth and the Welfare State: Implications for the Future of Environmentalism. *Social Science Quarterly (University of Texas Press)*, 58 (4), 692–699.
- Canon, G., 2018. Don’t blame wildfires on climate change – it’s environmentalists’

- fault, says Zinke. *The Guardian*, 13 Aug.
- Capstick, S.B. and Pidgeon, N.F., 2014. What is climate change scepticism? Examination of the concept using a mixed methods study of the UK public. *Global Environmental Change*, 24, 389–401.
- Carroll, J., 2013. ‘Indirect’ or ‘Engaged’: A Comparison of Hans Blumenberg’s and Charles Taylor’s Debt and Contribution to Philosophical Anthropology. *History of European Ideas*, 39 (6), 858–878.
- Carroll, J., 2014. Death and the Modern Imagination. *Society*, 51 (5), 562–566.
- Carroll, J., 2018. What is metaphysical sociology? In: S. James, ed. *Metaphysical sociology: on the work of John Carroll*. London: Routledge, 13–23.
- Carson, R., 1962. *Silent Spring*. Boston, Mass: Houghton Mifflin.
- Cassirer, E., 2010. *The Individual and the Cosmos in Renaissance Philosophy*. Chicago: University of Chicago Press.
- Cater, N., 2013. *The Lucky Culture and the Rise of an Australian Ruling Class*. Sydney: 4th Estate.
- Chakrabarty, D., 2000. *Provincializing Europe: Postcolonial Thought and Historical Difference*. Oxford: Princeton University Press.
- Chao, M.M. and Kesebir, P., 2013. Culture: The Grand Web of Meanings. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 317–332.
- Charter, D., 2003. Thatcher’s back - and gunning for the French. *The Times*, 15 May, p. 1.
- Checkel, J., Friedman, J., Matthijs, M., and Smith, R., 2016. Roundtable on Ideational Turns in the Four Subdisciplines of Political Science. *Critical Review*, 28 (2), 171–202.
- Choron, J., 1963. *Death and Western Thought*. New York: Macmillan.
- Christensen, B.L. and Nørgard, J.S., 1976. Social values and the limits to growth. *Technological Forecasting and Social Change*, 9 (4), 411–423.
- Christensen, L.T., Cheney, G., Conrad, C., and Lair, D., 2004. Corporate Rhetoric as Organizational Discourse. In: D. Grant, C. Hardy, C. Oswick, and L.L. Putnam, eds. *The SAGE Handbook of Organizational Discourse*. London: SAGE, 77–103.
- Clapp, J. and Dauvergne, P., 2005. *Paths to a green world: the political economy of the global environment*. Cambridge, Mass.: MIT Press.
- Clark, B. and Foster, J.B., 2009. Ecological Imperialism and the Global Metabolic Rift: Unequal Exchange and the Guano/Nitrates Trade. *International Journal of Comparative Sociology*, 50 (3–4), 311–334.
- Clark, B., Foster, J.B., and Longo, S.B., 2019. Metabolic Rifts and the Ecological Crisis. In: M. Vidal, T. Smith, T. Rotta, and P. Prew, eds. *The Oxford Handbook of Karl Marx*. Oxford: Oxford University Press.
- Climate Denier List, 2012. Richard D North. *The Climate Denier List*.
- Cockburn, A., 2008. Intellectual blasphemy. *Spiked*.
- Cockshott, W.P. and Cottrell, A., 1993. *Towards A New Socialism*. Nottingham: Spokesman.
- Cohen, D., 2018. *The Infinite Desire for Growth*. Oxford: Princeton University Press.
- Cohn, N., 1993. *The Pursuit Of The Millennium: Revolutionary Millenarians and Mystical Anarchists of the Middle Ages*. New Ed edition. London: Pimlico.
- Collomb, J.-D., 2014. The Ideology of Climate Change Denial in the United States. *European journal of American studies*, 9 (9–1).

- Competitive Enterprise Institute, 2006. Global Warming - 'Energy'.
- Condorcet, M.-J.-A.-N.C., Marquis de, 1795. *Outlines of an historical view of the progress of the human mind*. London.
- Connelly, J. and Smith, G., 2002. *Politics and the environment: from theory to practice*. 2nd ed. London: Routledge.
- Connor, S., 2011. Letters to a heretic: An email conversation with climate change sceptic Professor Freeman Dyson. *The Independent*, 25 Feb.
- Consigny, S., 1974. Rhetoric and Its Situations. *Philosophy & Rhetoric*, 7 (3), 175–186.
- Constable, J., 2018. The IPCC's Special Report, Global Warming of 1.5°C [online]. *Global Warming Policy Forum*. Available from: <https://www.thegwpf.com/the-ipcscs-special-report-global-warming-of-1-5%E2%84%83/> [Accessed 18 Feb 2020].
- Corbyn, P., 2019. *The Climate Policy We Have Isn't To Control Climate, It's To Control You!*
- Cox, H., 2016. *The Market as God*. London: Harvard University Press.
- Cozzolino, P.J. and Blackie, L.E.R., 2013. I Die, therefore I Am: The Pursuit of Meaning in the Light of Death. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 31–46.
- Crawley, S., Coffé, H., and Chapman, R., 2020. Public opinion on climate change: Belief and concern, issue salience and support for government action. *The British Journal of Politics and International Relations*, 22 (1), 102–121.
- Crichton, M., 2007. *IQ2US Debates: Global Warming is Not a Crisis*.
- Critchley, S., 2012. *The Faith of the Faithless: Experiments in Political Theology*. London: Verso Books.
- Crompton, T. and Kasser, T., 2009. *Meeting environmental challenges: The role of human identity*. WWF-UK Godalming, UK.
- Daly, H., 2015. *Essays Against Growthism*. World Economics Association.
- Daly, H., 2019. Growthism: its Ecological, Economic and Ethical Limits. *Resilience*.
- Daly, H. and Kunkel, B., 2018. Ecologies of Scale. *New Left Review*, 109 (January–February), 81–104.
- Darrell, A. and Pyszczynski, T., 2016. Terror Management Theory: Exploring the Role of Death in Life. In: L.A. Harvell and G.S. Nisbett, eds. *Denying Death*. New York, NY: Routledge, 1–15.
- De Morgan, A., 1872. *A Budget of Paradoxes ... Reprinted, with the author's additions, from the 'Atheneum'*. London: Longmans, Green & Co.
- Delingpole, J., 2018. Delingpole: Failing IPCC Ramps up Climate Hysteria with New Doom Litany Report. *Breitbart*.
- DeSmog, 2018. Sonja Boehmer-Christiansen [online]. *DeSmog UK*. Available from: <https://www.desmog.co.uk/sonja-boehmer-christiansen> [Accessed 29 Aug 2019].
- DeSmog, 2019a. Myron Ebell [online]. *DeSmogBlog*. Available from: <https://www.desmogblog.com/myron-ebell> [Accessed 22 Oct 2019].
- DeSmog, 2019b. Bjørn Lomborg [online]. *DeSmogBlog*. Available from: <https://www.desmogblog.com/bjorn-lomborg> [Accessed 24 Jul 2019].
- DeSmog, 2019c. Freeman Dyson [online]. *DeSmogBlog*. Available from: <https://www.desmogblog.com/freeman-dyson> [Accessed 4 May 2019].
- DeSmog, 2020a. Global Warming Disinformation Database [online]. *DeSmog*. Available from: <https://www.desmogblog.com/global-warming-denier-database> [Accessed 22 Sep 2020].

- DeSmog, 2020b. Nigel Lawson [online]. *DeSmog*. Available from: <https://www.desmogblog.com/nigel-lawson> [Accessed 22 Sep 2020].
- DeSmog, 2020c. Patrick Moore [online]. *DeSmog*. Available from: <https://www.desmogblog.com/patrick-moore> [Accessed 12 Nov 2020].
- DeSmog, 2020d. Benny Peiser [online]. *DeSmog*. Available from: <https://www.desmogblog.com/benny-peiser> [Accessed 12 Nov 2020].
- DeSmog, 2020e. Matt Ridley [online]. *DeSmog*. Available from: <https://www.desmogblog.com/matt-ridley> [Accessed 22 Sep 2020].
- Deutsch, D., 2011. *The Beginning of Infinity: Explanations that Transform the World*. London: Allen Lane.
- Diamond, J., 2005. *Collapse*. London: Allen Lane.
- Dickinson, J., 2009. The people paradox: Self-esteem striving, immortality ideologies, and human response to climate change. *Ecology and Society*, 14 (1).
- Diderot, D., 1876. *Œuvres complètes de Diderot*. Paris: Garnier frères.
- Diethelm, P. and McKee, M., 2009. Denialism: what is it and how should scientists respond? *European Journal of Public Health*, 19 (1), 2–4.
- Dietz, R., 2018. The Secret of Eternal Growth? It's Wishful Thinking [online]. *Resilience*. Available from: <https://www.resilience.org/stories/2018-11-07/the-secret-of-eternal-growth-its-wishful-thinking/> [Accessed 19 Nov 2018].
- Dobson, A., 2000. *Green political thought*. 3rd ed. New York, N.Y.: Routledge.
- Dobson, A., 2003. *Citizenship and the environment*. Oxford: University Press.
- Dobson, A., 2007. *Green political thought*. 4th ed. London: Routledge.
- Dobson, A., 2014. *Listening for Democracy: Recognition, Representation, Reconciliation*. Oxford: Oxford University Press.
- Domínguez, A.P. y S., Pinilla, K.F., Cordero, J.M.C., Domínguez, A.P. y S., Pinilla, K.F., and Cordero, J.M.C., 2017. Thomas Hobbes: The Modern Economist. *Praxis Filosófica*, (44), 221–250.
- Douglas, R.M., 2007. Growthism and the Green Backlash. *The Political Quarterly*, 78 (4), 547–555.
- Douglas, R.M., 2008. Historicism and the green backlash: a study of Julian Simon and Bjorn Lomborg. *International Journal of Green Economics*, 2 (2), 176–189.
- Douglas, R.M., 2009. The Green Backlash: Scepticism or Scientism? *Social Epistemology*, 23 (2), 145–163.
- Douglas, R.M., 2019. The 'glass ceiling' of the environmental state and the social denial of mortality. *Environmental Politics*, 1–18.
- Dryzek, J., 1996. *Democracy in capitalist times: ideals, limits, and struggles / John S. Dryzek*. Oxford: Oxford University Press.
- Dryzek, J.S., 2013. *The Politics of the Earth: Environmental Discourses*. 3rd ed. Oxford: Oxford University Press.
- Dryzek, J.S. and Lo, A.Y., 2015. Reason and rhetoric in climate communication. *Environmental Politics*, 24 (1), 1–16.
- Duit, A., Feindt, P.H., and Meadowcroft, J., 2016. Greening Leviathan: the rise of the environmental state? *Environmental Politics*, 25 (1), 1–23.
- Dunlap, R.E., 2013. Climate Change Skepticism and Denial: An Introduction. *American Behavioral Scientist*, 57 (6), 691–698.
- Dunlap, R.E., 2014. Clarifying anti-reflexivity: conservative opposition to impact science and scientific evidence. *Environmental Research Letters*, 9 (2), 021001.
- Dunlap, R.E. and Catton, W., 1979. Environmental Sociology. *Annual Review of Sociology*, 5, 243–273.
- Dunlap, R.E. and Jacques, P.J., 2013. Climate Change Denial Books and Conservative

- Think Tanks: Exploring the Connection. *American Behavioral Scientist*, 57 (6), 699–731.
- Dunlap, R.E. and McCright, A., 2015. Challenging Climate Change: The Denial Global Countermovement. In: R.E. Dunlap and R.J. Brulle, eds. *Climate change and society: sociological perspectives*. New York: Oxford University Press, 300–322.
- Dunlap, R.E., McCright, A.M., and Yarosh, J.H., 2016. The Political Divide on Climate Change: Partisan Polarization Widens in the U.S. *Environment: Science and Policy for Sustainable Development*, 58 (5), 4–23.
- Dunlap, R.E. and Van Liere, K., 1984. Commitment to the Dominant Social Paradigm and Concern for Environmental Quality. *Social Science Quarterly*, (65), 1013–1028.
- Durkheim, E., 1973. *Moral Education*. London: The Free Press.
- Durkheim, E., 1995. *The Elementary Forms of Religious Life*. New Ed edition. New York: Free Press.
- Durkheim, E., 1997. *Suicide: A Study in Sociology*. Reissue edition. New York: Simon & Schuster.
- Dyson, F., 1969. Human consequences of the exploration of space. *Ekistics*, 28 (169), 452–455.
- Dyson, F., 1982. Bombs and Poetry: Tanner Lectures on Human Values.
- Dyson, F., 1988. *Infinite In All Directions*. New York: Harper & Row.
- Dyson, F., 1996. The Scientist As Rebel. *The American Mathematical Monthly*, 103 (9), 800–805.
- Dyson, F., 1997. *Imagined Worlds*. London: Harvard University Press.
- Dyson, F., 1998. Science as a Craft Industry. *Science*, 280 (5366), 1014–1015.
- Dyson, F., 2006. *Heretical thoughts about science and society*. Boston: Boston University.
- Dyson, F., 2007. Heretical thoughts about science and society. *Edge*.
- Dyson, F., 2009. Freeman Dyson Takes on the Climate Establishment.
- Dyson, F., 2014. The Scientist As Rebel: A Tribute To Freeman Dyson On His 90th Birthday.
- Dyson, F., 2015. Conversations That Matter: Carbon Dioxide is Making The World Greener. Video.
- Eckersley, R., 1992. *Environmentalism and political theory: toward an ecocentric approach*. London: UCL Press.
- Eckersley, R., 2004. *The Green State: Rethinking Democracy and Sovereignty*. London: MIT Press.
- Ehrlich, P.R., 1968. *The Population Bomb*. New York: Ballantine Books.
- Ehrlich, P.R. and Ehrlich, A.H., 1996. *Betrayal of Science and Reason: How Anti-Environmental Rhetoric Threatens Our Future*. Island Press.
- Eliade, M., 1959. *The Sacred and the Profane: The Nature of Religion*. Underlining/Highlighting edition. San Diego: Harcourt Australia.
- Elsasser, S.W. and Dunlap, R.E., 2013. Leading Voices in the Denier Choir: Conservative Columnists' Dismissal of Global Warming and Denigration of Climate Science. *American Behavioral Scientist*, 57 (6), 754–776.
- Engels, F., 1987. Outlines of a critique of political economy. In: *Collected Works of Karl Marx and Frederick Engels*. London: Lawrence & Wishart, 418–44.
- Ettinger, R.C.W., 1965. *The Prospect of Immortality*. London: Sidgwick & Jackson.
- Evans, A., 2017. *The Myth Gap: What Happens When Evidence and Arguments Aren't Enough?* London: Eden Project Books.

- Fairclough, N., 2013. *Critical Discourse Analysis: The Critical Study of Language*. London: Routledge.
- Feidt, D., 2019. "Eat the Children": Decades of Far-Right LaRouche Provocations Renewed [online]. *Unicorn Riot*. Available from: <https://unicornriot.ninja/2019/eat-the-children-decades-of-far-right-larouche-provocations-renewed/> [Accessed 30 Jun 2020].
- Feldman, D.B., 2013. The Meaning of Hope and Vice Versa: Goal-Directed Thinking and the Construction of a Meaningful Life. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 141–150.
- Ferkany, M., 2015. Is it Arrogant to Deny Climate Change or is it Arrogant to Say it is Arrogant? Understanding Arrogance and Cultivating Humility in Climate Change Discourse and Education. *Environmental Values*, 24 (6).
- Finlayson, A., ed., 2004a. The Interpretive Approach in Political Science: a Symposium. *British Journal of Politics and International Relations*, 6, 129–164.
- Finlayson, A., 2004b. Political science, political ideas and rhetoric. *Economy and Society*, 33 (4), 528–549.
- Finlayson, A., 2007. From Beliefs to Arguments: Interpretive Methodology and Rhetorical Political Analysis. *British Journal of Politics and International Relations*, 9, 545–563.
- Finlayson, A., 2018. The Metaphysics of Brexit. *Third Text*, 32 (5–6), 598–604.
- Fischer, J., 2009. Exploring the Core Identity of Philosophical Anthropology through the Works of Max Scheler, Helmuth Plessner, and Arnold Gehlen, 1 (1), 153–170.
- Fisher, D.R., 2002. From the Treadmill of Production to Ecological Modernization? Applying a Habermasian Framework to Society-Environment Relationships. In: A.P.J. Mol and F.H. Buttel, eds. *The Environmental State Under Pressure*. Oxford: Elsevier Science, 53–64.
- Floru, J.P., 2013. *Heavens on Earth: How To Create Mass Prosperity*. London: Biteback.
- Forchtner, B., Kroneder, A., and Wetzel, D., 2018. Being Skeptical? Exploring Far-Right Climate-Change Communication in Germany. *Environmental Communication*, 12 (5), 589–604.
- Forster, P., 2011. Look to adaptation, not alarmism. *Church Times*, 19 Oct.
- Forster, P., 2014. Foreword. In: *Ethics and Climate Change Policy*. London: Global Warming Policy Foundation, iii–v.
- Forster, P., 2018. Interview with Peter Forster. Interviewed by Richard Douglas, 11 Jul.
- Foster, J.B., 1999. Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology. *American Journal of Sociology*, 105 (2), 366–405.
- Foster, J.B., 2000. *Marx's Ecology: Materialism and Nature*. New York: NYU Press.
- Foster, J.B., 2012. The Planetary Rift and the New Human Exemptionalism: A Political-Economic Critique of Ecological Modernization Theory. *Organization & Environment*, 25 (3), 211–237.
- Foster, J.B., 2017a. The Long Ecological Revolution. *Monthly Review*, 69 (6).
- Foster, J.B., 2017b. The Long Ecological Revolution. *Monthly Review*, 69 (6).
- Foster, J.B., Clark, B., and York, R., 2010. *The Ecological Rift: Capitalism's War on the Earth*. New York: Monthly Review Press.
- Foster, J.B. and Holleman, H., 2012. Weber and the Environment: Classical Foundations for a Postexemptionalist Sociology. *American Journal of Sociology*, 117 (6), 1625–1673.

- Frank, T., 2004. *What's Wrong with America?* London: Secker & Warburg.
- Frankl, V.E., 2004. *Man's Search For Meaning: The classic tribute to hope from the Holocaust*. New Ed edition. London: Rider.
- Freeden, M., 1996. *Ideologies and Political Theory: A Conceptual Approach*. Oxford: Clarendon Press.
- Freese, B., 2020. *Industrial-Strength Denial*. Oakland, California: California University Press.
- Friedman, B.M., 2005. *The Moral Consequences of Economic Growth*. Reprint edition. New York: Alfred A. Knopf.
- Friedman, M., 1995. Interview with Milton Friedman. In: *Economists and the Environment*. London: Zed Books, 11–12.
- Friedman, T.L., 2008. *Hot, Flat and Crowded*. London: Allen Lane.
- Friedrichs, J., 2011. Peak energy and climate change: The double bind of post-normal science. *Futures*, 43 (4), 469–477.
- Friend, T., 2017. Silicon Valley's Quest to Live Forever. *The New Yorker*, 42.
- Funkenstein, A., 1986. *Theology and the Scientific Imagination from the Middle Ages to the Seventeenth Century*. Chichester: Princeton University Press.
- Gadamer, H.-G., 1989. *Truth and Method*. 2nd edition. London: Sheed & Ward.
- Gagnier, R., 2000. *The Insatiability of Human Wants: Economics and Aesthetics in Market Society*. Chicago: University of Chicago Press.
- Gardner, T., 2004. Limits to Growth? – A Perspective on the Perpetual Debate. *Environmental Sciences*, 1 (2), 121–138.
- Gare, A., 2008. Approaches to the Question, 'What is Life?': Reconciling Theoretical Biology with Philosophical Biology. *Cosmos and History: The Journal of Natural and Social Philosophy*, 4 (1–2), 53–77–77.
- Gates, B., 2013. An Economist and a Biologist Test a Theory [online]. *gatesnotes.com*. Available from: <https://www.gatesnotes.com/Books/The-Bet> [Accessed 6 Nov 2018].
- Gelin, M., 2019. The Misogyny of Climate Deniers. *The New Republic*.
- Gentile, E., 2006. *Politics as Religion*. London: Princeton University Press.
- Georgescu-Roegen, N., 1976. *Energy and Economic Myths*. Oxford: Pergamon.
- Gill, R., 2005. Discourse Analysis. In: P. Atkinson, M.W. Bauer, and G. Gaskell, eds. *Qualitative Researching with Text, Image and Sound: A Practical Handbook for Social Research*. London: SAGE, 172–190.
- Gillespie, M.A., 2008. *The Theological Origins of Modernity*. Chicago: University of Chicago Press.
- Gilroy, P., 1993. *The Black Atlantic: Modernity and Double Consciousness*. London: Verso.
- Glaser, B.G., 1978. *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Mill Valley, CA: Sociology Press.
- Glaser, B.G. and Strauss, A.L., 1967. *The discovery of grounded theory: strategies for qualitative research*. Chicago: Aldine Publishing.
- GlobalWarming.org, 2004. The Cooler Heads Coalition [online]. *GlobalWarming.org*. Available from: <https://web.archive.org/web/20040412001034/http://www.globalwarming.org/article.php?uid=562> [Accessed 28 Aug 2019].
- Glynos, J., Howarth, D., Norval, A., and Speed, E., 2009. *Discourse Analysis: Varieties and Methods*. Southampton: National Centre for Research Methods, No. NCRM/014.
- Golman, R., Hagmann, D., and Loewenstein, G., 2017. Information Avoidance. *Journal*

- of *Economic Literature*, 55 (1), 96–135.
- Goodchild, P., 2007. *Theology of Money*. London: SCM Press.
- Gray, J., 2004. *Heresies: Against Progress And Other Illusions*. First Edition edition. London: Granta Books.
- Gray, J., 2008. *Black Mass: Apocalyptic Religion and the Death of Utopia*. Reprint edition. London: Penguin.
- Gruman, G.J., 2003. *A History of Ideas About the Prolongation of Life*. New York: Springer.
- Guha, R., 2014. *Environmentalism: A Global History*. London: Penguin.
- Gurian, W., 1954. Totalitarianism as Political Religion. In: C.J. Friedrich, ed. *Totalitarianism*. Cambridge, Mass: Harvard University Press.
- Habermas, J., 1975. *Legitimation crisis*. Boston: Beacon Press.
- Hajer, M. and Versteeg, W., 2005. A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy & Planning*, 7 (3), 175–184.
- Hajer, M.A., 1995. *The politics of environmental discourse: ecological modernization and the policy process*. Oxford: Clarendon Press.
- Häkkinen, K. and Akrami, N., 2014. Ideology and climate change denial. *Personality and Individual Differences*, 70, 62–65.
- Hall, C.A. and Day, J.W., 2009. Revisiting the Limits to Growth After Peak Oil: In the 1970s a rising world population and the finite resources available to support it were hot topics. Interest faded—but it’s time to take another look. *American scientist*, 97 (3), 230–237.
- Haltinner, K. and Sarathchandra, D., 2018. Climate change skepticism as a psychological coping strategy. *Sociology Compass*, 12 (6), e12586.
- Haltinner, K. and Sarathchandra, D., 2020. Pro-Environmental Views of Climate Skeptics. *Contexts*, 19 (1), 36–41.
- Hamilton, C., 2010. *Requiem for a Species: Why We Resist the Truth about Climate Change*. London: Earthscan.
- Hamilton, C., 2011. Why we resist the truth about climate change. Presented at the Congreso Cambio Climático, Universidad Nacional de La Plata, Argentina, 6.
- Hamilton, C., 2013. Abbott and co can’t ignore climate change forever. *The Drum*.
- Hamilton, C., 2014. Moral Collapse in a Warming World. *Ethics & International Affairs*, 28 (3), 335–342.
- Hamilton, C. and Kasser, T., 2009. Psychological adaptation to the threats and stresses of a four degree world. In: *Four degrees and beyond*. Presented at the Four Degrees and Beyond, Oxford University.
- Harblin, T.D., 1977. Mine or Garden? Values and the Environment—Probable Sources of Change in the Next Hundred Years. *Zygon*, 12 (2), 134–150.
- Harries, K., 2002. *Infinity and Perspective*. London: MIT Press.
- Harrison, E.R., 1987. *Darkness at Night: A Riddle of the Universe*. London: Harvard University Press.
- Hart, R.P., 1997. *Modern Rhetorical Criticism*. 2nd ed. Boston: Allyn and Bacon.
- Harvell, L.A. and Nisbett, G.S., eds., 2016. *Denying Death*. New York, NY: Routledge.
- Hatzisavvidou, S., 2019. ‘The climate has always been changing’: Sarah Palin, climate change denialism, and American conservatism. *Celebrity Studies*, 1–18.
- Hausknost, D., 2014. Decision, choice, solution: ‘agentic deadlock’ in environmental politics. *Environmental Politics*, 23 (3), 357–375.
- Hausknost, D., 2017. Greening the Juggernaut? The modern state and the ‘glass ceiling’ of environmental transformation. In: M. Domazet, ed. *Ecology and justice*:

- contributions from the margins*. Zagreb: Institute for Political Ecology, 49–76.
- Hausknost, D., 2019. *Liberal Democracy and the Problem of Political Agency*. London: Taylor & Francis.
- Hausknost, D., 2020. The environmental state and the glass ceiling of transformation. *Environmental Politics*, 29 (1), xy.
- Hausknost, D. and Hammond, M., 2019. Beyond the Environmental State? The Political Prospects of a Sustainability Transformation. *Environmental Politics*.
- Hay, C., 2004. ‘Taking Ideas Seriously’ in Explanatory Political Analysis. *British Journal of Politics and International Relations*, 6, 142–149.
- Haycock, D.B., 2008. Living Forever in Early Modern England: Sir Francis Bacon and the Project for Immortality. In: M.E. Novak, ed. *The Age of Projects*. Toronto: University of Toronto Press, 166–184.
- Hayek, F.A., 1979. *The road to serfdom*. London: Routledge & Kegan Paul.
- Hayek, F.A., 1990. *The Constitution of Liberty*. London: Routledge.
- Hayek, F.A., 2011. *The Constitution of Liberty*. London: Routledge.
- Hayhoe, K., 2020. *Talking Climate: Why Facts Are Not Enough*.
- Heine, S.J., Proulx, T., and Vohs, K.D., 2006. The Meaning Maintenance Model: On the Coherence of Social Motivations. *Personality and Social Psychology Review*, 10 (2), 88–110.
- Heintzelman, S.J. and King, L.A., 2013. The Origins of Meaning: Objective Reality, the Unconscious Mind, and Awareness. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 87–101.
- Helvarg, D., 2004. *The War Against the Greens: The ‘Wise-Use’ Movement, the New Right, and the Browning of America*. Big Earth Publishing.
- Herrick, J.A., 2005. *The History and Theory of Rhetoric: An Introduction*. 3rd ed. Boston: Allyn and Bacon.
- Herschel, S.W. and Herschel, C., 2013. *The Herschel Chronicle*. Cambridge: Cambridge University Press.
- Hess, D.J., 2014. When Green Became Blue: Epistemic Rift and the Corraling of Climate Science. *Political Power and Social Theory*, 27 (Fields of Knowledge: Science, Politics and Publics in the Neoliberal Age), 123–153.
- Hickel, J., 2018. Here’s a simple solution to the green growth / degrowth debate. *Jason Hickel*.
- Hicks, J.A. and Routledge, C., eds., 2013. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media.
- Hobbes, T., 1998. *On the Citizen*. Cambridge: Cambridge University Press.
- Holton, J.A., 2010. The Coding Process and Its Challenges. *Grounded Theory Review*, 9 (1), 21–40.
- Honenberger, J., 2015. *Naturalism and Philosophical Anthropology*. New York: Palgrave Macmillan.
- Hooykaas, R., 2000. *Religion and the Rise of Modern Science*. Regent College Publishing.
- Horgan, J., 1996. *The end of science: facing the limits of knowledge in the twilight of the scientific age*. Harlow: Addison-Wesley Pub.
- Horkheimer, M., 2013. *Eclipse of reason*. New York: Bloomsbury.
- Howarth, C.C. and Sharman, A.G., 2015. Labeling opinions in the climate debate: a critical review. *Wiley Interdisciplinary Reviews: Climate Change*, 6 (2), 239–254.

- Howarth, D.R.D., Stavrakakis, Y., and Norval, A.J., eds., 2000. *Discourse Theory and Political Analysis: Identities, Hegemony: Identities, Hegemonies and Social Change*. First Edition edition. Manchester: Manchester University Press.
- Huber, P.W. and Mills, M.P., 2005. *The Bottomless Well: The Twilight of Fuel, The Virtue of Waste, and Why We Will Never Run Out of Energy*. New York: Basic Books.
- Hughes, G., 2003. *Transcendence and History: The Search for Ultimacy from Ancient Societies to Postmodernity*. London: University of Missouri Press.
- Hulme, M., 2008. The conquering of climate: discourses of fear and their dissolution. *The Geographical Journal*, 174 (1), 5–16.
- Hunold, C. and Dryzek, J., 2005. Green Political Strategy and the State. In: J. Barry and R. Eckersley, eds. *The State and the Global Ecological Crisis*. London: MIT Press, 75–95.
- Inhofe, J., 2003. Congressional Record, Volume 149 Issue 113 [online]. Available from: <https://www.gpo.gov/fdsys/pkg/CREC-2003-07-28/html/CREC-2003-07-28-pt1-PgS10012.htm> [Accessed 18 Oct 2018].
- IPCC, 2018. *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Geneva: World Meteorological Society.
- Jackson, T., 2006. Chapter 25: Consuming Paradise? Towards a Social and Cultural Psychology of Sustainable Consumption. In: T. Jackson, ed. *Earthscan Reader in Sustainable Consumption*. London: Earthscan.
- Jackson, T., 2013. Angst essen Seele auf — Escaping the ‘iron cage’ of consumerism. In: U. Schneidewind, T. Santarius, and A. Humburg, eds. *Economy of sufficiency: essays on wealth in diversity, enjoyable limits and creating commons*. Wuppertal: Wuppertal Inst. for Climate, Environment and Energy, 53–68.
- Jackson, T., 2017. *Prosperity without Growth: Foundations for the Economy of Tomorrow*. 2nd ed. London: Routledge.
- Jackson, T., 2018. How the light gets in—The science behind growth scepticism. *CUSP*.
- Jackson, T. and Pepper, M., 2011. Consumerism as Theodicy: Religious and Secular Meaning Functions in Modern Society. In: L. Thomas, ed. *Religion, Consumerism and Sustainability: Paradise Lost?* London: Palgrave Macmillan UK, 17–36.
- Jacobs, M., 2016. High pressure for low emissions: How civil society created the Paris climate agreement. *Juncture*, 22 (4), 314–323.
- Jacques, P., 2006. The Rearguard of Modernity: Environmental Skepticism as a Struggle of Citizenship. *Global Environmental Politics*, 6 (1), 76–101.
- Jacques, P.J., 2009. *Environmental Skepticism: Ecology, Power and Public Life*. Farnham: Ashgate.
- Jacques, P.J., 2012. A General Theory of Climate Denial. *Global Environmental Politics*, 12 (2), 9–17.
- Jacques, P.J., Dunlap, R.E., and Freeman, M., 2008. The organisation of denial: Conservative think tanks and environmental scepticism. *Environmental Politics*, 17 (3), 349–385.
- James, C., 2017. Mass death dies hard.
- James, S., ed., 2018. *Metaphysical sociology: on the work of John Carroll*. 1st ed.

- London: Routledge.
- James, W., 1890. *The Principles of Psychology*. New York: H Holt & Co.
- Janoff-Bulman, R., 1992. *Shattered assumptions: Towards a new psychology of trauma*. New York, NY, US: Free Press.
- Jonas, H., 1982. *The Phenomenon of Life: Toward a Philosophical Biology*. London: University of Chicago Press.
- Jonas, H., 1984. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. London: University of Chicago Press.
- Jonas, H., 1996. *Mortality and Morality: A Search for Good After Auschwitz*. Northwestern University Press.
- Jones, B., 2011. Barry Jones: In climate change, everything old is new again. *The Conversation*.
- Jones, G.S., 2016. *Karl Marx: Greatness and Illusion*. First Edition edition. London: Allen Lane.
- Jones, G.S., 2020. Malthus, nineteenth-century socialism, and Marx. *The Historical Journal*, 63 (1), 91–106.
- Jørgensen, M.W. and Phillips, L.J., 2002. *Discourse Analysis as Theory and Method*. London: SAGE.
- Josephson-Storm, J.A., 2017. *The Myth of Disenchantment: Magic, Modernity, and the Birth of the Human Sciences*. London: University of Chicago Press.
- Kahan, D.M., 2013. Ideology, motivated reasoning, and cognitive reflection. *Judgment and Decision Making*, 8 (4), 18.
- Kahan, D.M., 2015. The Politically Motivated Reasoning Paradigm, Part 1: What Politically Motivated Reasoning Is and How to Measure It. In: R.A. Scott and S.M. Kosslyn, eds. *Emerging Trends in the Social and Behavioral Sciences*. Chichester: Wiley, 1–16.
- Kahan, D.M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L.L., Braman, D., and Mandel, G., 2012. The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*, 2 (10), 732–735.
- Kallis, G., 2019. *Limits*. 1 edition. Stanford, California: Stanford University Press.
- Kant, I., 1996. Toward perpetual peace. In: M.J. Gregor, ed. *Practical Philosophy*. Cambridge: Cambridge University Press, 311–352.
- Kasser, T. and Sheldon, K.M., 2000. Of Wealth and Death: Materialism, Mortality Salience, and Consumption Behavior. *Psychological Science*, 11 (4), 348–351.
- Kelly, M., 2016. Hubris: The Troubling Science, Economics and Politics of Climate Change [online]. *The Global Warming Policy Forum (GWPF)*. Available from: <https://www.thegwpf.com/hubris-the-troubling-science-economics-and-politics-of-climate-change/> [Accessed 10 Jan 2020].
- Kemp, J., 1984. Convention in Dallas: The Republicans; Transcript of Kemp's Address on Reagan Record. *The New York Times*, 22 Aug, p. 17.
- Kesebir, P., 2011. Existential Functions of Culture: The Monumental Immortality Project. In: A. Leung, C.Y. Chiu, and Y.Y. Hong, eds. *Cultural Processes: A social psychological perspective*. Oxford: Oxford University Press, 96–110.
- Killingsworth, M.J. and Palmer, J.S., 1992. *Ecospeak: Rhetoric and Environmental Politics in America*. Carbondale and Edwardsville: Southern Illinois University Press.
- King, A., Okita, S., Peccei, A., Pestel, E., Thiemann, H., and Wilson, C., 1972. Commentary. In: *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. London: Earth Island, 185–197.
- Klein, N., 2015. *This Changes Everything: Capitalism vs. the Climate*. London:

- Penguin.
- Koyré, A., 1991. *From the Closed World to the Infinite Universe*. London: Johns Hopkins University Press.
- Kragh, P.H.S., 2008. *Entropic Creation: Religious Contexts of Thermodynamics and Cosmology*. Aldershot: Ashgate Publishing.
- Krange, O., Kaltenborn, B.P., and Hultman, M., 2019. Cool dudes in Norway: climate change denial among conservative Norwegian men. *Environmental Sociology*, 5 (1), 1–11.
- Krauthammer, C., 1991. Saving Nature, but Only for Man. *Time*, 82.
- Kroll, J.P., 2010. A Human End to History? Hans Blumenberg, Karl Lowith and Carl Schmitt on Secularization and Modernity. PhD. Princeton, Princeton.
- Kunda, Z., 1990. The case for motivated reasoning. *Psychological Bulletin*, 108 (3), 480–498.
- Kurzweil, R., 2006. *The Singularity is Near*. London: Duckworth.
- Lachman, M. and Walker, S., 2019. Life≠alive: What can Schrödinger’s cat say about 3D printers on Mars? *Aeon*.
- Laclau, E. and Mouffe, C., 2001. *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics*. London: Verso.
- Lahsen, M., 2008. Experiences of modernity in the greenhouse: A cultural analysis of a physicist “trio” supporting the backlash against global warming. *Global Environmental Change*, 18 (1), 204–219.
- Lang, B., 2010. Six Questions on (or About) Holocaust Denial. *History & Theory*, 49 (2), 157–168.
- Lasch, C., 1989. Progress: The Last Superstition. *Tikkun*, 4 (3), 27–30.
- Lasch, C., 1991. *The True and Only Heaven: Progress and Its Critics*. New York, NY: Norton.
- Latour, B., 1993. *We Have Never Been Modern*. Cambridge, Mass: Harvard University Press.
- Lawson, N., 2008. *An Appeal to Reason: A Cool Look at Global Warming*. New York: Overlook Duckworth.
- Lawson, N., 2018. Lord Lawson Sparks On-Air Row By Calling Climate Change “PC Claptrap” [online]. *LBC*. Available from: <https://www.lbc.co.uk/radio/presenters/iain-dale/lord-lawson-sparks-on-air-row-by-calling-climate/> [Accessed 18 Feb 2020].
- Leadbeater, C., 2003. *Up the Down Escalator*. London: Penguin.
- LeGreco, M., 2014. Discourse Analysis. In: J. Mills and M. Birks, eds. *Qualitative Methodology: A Practical Guide*. London: Sage, 67–88.
- Leipold, S., Feindt, P.H., Winkel, G., and Keller, R., 2019. Discourse analysis of environmental policy revisited: traditions, trends, perspectives. *Journal of Environmental Policy & Planning*, 21 (5), 445–463.
- Leiss, W., 1972. *The domination of nature*. New York: George Braziller.
- Lejano, R.P., 2019. Ideology and the Narrative of Climate Skepticism. *Bulletin of the American Meteorological Society*, 100 (12), ES415–ES421.
- Lennox, J.G., 2001. *Aristotle’s Philosophy of Biology: Studies in the Origins of Life Science*. Cambridge: Cambridge University Press.
- Lent, J., 2017. *The Patterning Instinct: A Cultural History of Humanity’s Search for Meaning*. Lanham, Maryland: Prometheus Books.
- Lepore, J., 2010. The Iceman | The New Yorker. *The New Yorker*.
- Levy, D.J., 1993. *The Measure of Man: Incursions in Philosophical and Political Anthropology*. St Albans: Claridge Press.

- Lewandowsky, S., Cook, J., and Lloyd, E., 2018. The ‘Alice in Wonderland’ mechanics of the rejection of (climate) science: simulating coherence by conspiracism. *Synthese*, 195 (1), 175–196.
- Lewandowsky, S. and Oberauer, K., 2016. Motivated Rejection of Science. *Current Directions in Psychological Science*, 25 (4), 217–222.
- Lewandowsky, S., Oberauer, K., and Gignac, G.E., 2013. NASA Faked the Moon Landing—Therefore, (Climate) Science Is a Hoax: An Anatomy of the Motivated Rejection of Science. *Psychological Science*, 24 (5), 622–633.
- Lewis, M.W., 1992. *Green Delusions: An Environmentalist Critique of Radical Environmentalism*. London: Duke University Press.
- Liebreich, M., 2018. The Secret of Eternal Growth: The physics behind pro-growth environmentalism [online]. *Initiative for Free Trade*. Available from: http://ifretrade.org/article/the_secret_of_eternal_growth_the_physics_behind_pro_growth_environmentalism [Accessed 19 Nov 2018].
- Lindsay, J.A., 2013. *Dot Dot Dot: Infinity Plus God Equals Folly*. Fareham: Onus Books.
- Lipstadt, D.E., 1993. *Denying the Holocaust: The Growing Assault on Truth and Memory*. New York: Free Press.
- Little, A., 2010. Gingrich slams Obama on Gulf gusher and sounds off on climate. *Grist*.
- Liu, D.W.C., 2012. Science Denial and the Science Classroom. *CBE—Life Sciences Education*, 11 (2), 129–134.
- Lockwood, M., 2010. The limits to environmentalism – Part 1. *Political Climate*.
- Lockwood, M., 2011. The blogger’s dilemma. *Political Climate*.
- Lomborg, B., 2001. *The Skeptical Environmentalist: Measuring the Real State of the World*. Cambridge: Cambridge University Press.
- Lomborg, B., 2007. *Cool It: The Skeptical Environmentalist’s Guide to Global Warming*. New York: Alfred A. Knopf.
- Lomborg, B. and Rubin, O., 2009. The Dustbin of History: Limits to Growth. *Foreign Policy*.
- Lowe, T., Brown, K., Dessai, S., de França Doria, M., Haynes, K., and Vincent, K., 2006. Does tomorrow ever come? Disaster narrative and public perceptions of climate change. *Public Understanding of Science*, 15 (4), 435–457.
- Löwith, K., 1949. *Meaning in History*. Chicago: University of Chicago Press.
- Lubac, H. de, 1995. *The Drama of Atheist Humanism*. New edition edition. San Francisco: Ignatius Press.
- Lynas, M., 2007. *Six degrees: our future on a hotter planet*. London: Fourth Estate.
- Lynas, M., 2012. *The God species: how the planet can survive the age of humans*. London: Fourth Estate.
- Lynas, M., 2015. Ecomodernism launch was a screw-up of impressive proportions. *The Guardian*, 30 Sep.
- Lynas, M., 2018. Interview with Mark Lynas. Interviewed by Richard Douglas, 19 Jan.
- Lytard, J.-F., 1984. *The Postmodern Condition: A Report on Knowledge*. Manchester: Manchester University Press.
- Maddox, J., 1972. *The Doomsday Syndrome*. London: Macmillan.
- Magdoff, F. and Foster, J.B., 2011. *What every environmentalist needs to know about capitalism: a citizen’s guide to capitalism and the environment*. New York: Monthly Review Press.
- Maibach, E., Roser-Renouf, C., and Leiserowitz, A., 2009. *Global Warming’s Six Americas 2009: An Audience Segmentation Analysis*. Fairfax, VA: George

- Mason University.
- Malm, A., 2015. *Fossil Capital: The Rise of Steam-Power and the Roots of Global Warming*. London: Verso Books.
- Mann, M.E., Hassol, S.J., and Toles, T., 2017. Doomsday scenarios are as harmful as climate change denial. *Washington Post*, 12 Jul.
- Mantzavinos, C., 2016. Hermeneutics. In: E.N. Zalta, ed. *The Stanford Encyclopedia of Philosophy*. Stanford University.
- Marshall, G., 2013. Climate-change activists are playing a dangerous game with their ‘enemy’ narrative. *The Guardian*, 16 Nov.
- Marshall, G., 2014. *Don’t even think about it: why our brains are wired to ignore climate change*. New York, NY: Bloomsbury Publishing.
- Marshall, G., 2015. We need to engage the Tories on climate change. *Climate Home News*.
- Martin, J., 2014. *Politics and Rhetoric: A critical introduction*. Abingdon: Routledge.
- Martin, J., 2015. Situating Speech: A Rhetorical Approach to Political Strategy. *Political Studies*, 63 (1), 25–42.
- Martinez, A.A., 2016. Giordano Bruno and the heresy of many worlds. *Annals of Science*, 73 (4), 345–374.
- Marx, K., 1973. *Grundrisse: Foundations of the critique of political economy*. London: Pelican.
- Mason, P., 2015. *PostCapitalism: A Guide to Our Future*. London: Allen Lane.
- McAdams, D.P., 1993. *The Stories We Live by: Personal Myths and the Making of the Self*. London: Guilford Press.
- McCright, A. and Dunlap, R.E., 2011a. The Polarization of Climate Change and Polarization in the American Public’s Views of Global Warming, 2001-2010. *The Sociological Quarterly*, 52, 155–194.
- McCright, A.M., 2016. Anti-Reflexivity and Climate Change Skepticism in the US General Public. *Human Ecology Review*, 22 (2), 77–108.
- McCright, A.M. and Dunlap, R.E., 2010. Anti-reflexivity. *Theory, Culture & Society*, 27 (2–3), 100–133.
- McCright, A.M. and Dunlap, R.E., 2011b. Cool dudes: The denial of climate change among conservative white males in the United States. *Global Environmental Change*, 21 (4), 1163–1172.
- McCright, A.M. and Dunlap, R.E., 2011c. The Politicization of Climate Change and Polarization in the American Public’s Views of Global Warming, 2001–2010. *The Sociological Quarterly*, 52 (2), 155–194.
- McCright, A.M., Dunlap, R.E., and Xiao, C., 2013. Increasing Influence of Party Identification on Perceived Scientific Agreement and Support for Government Action on Climate Change in the United States, 2006–12. *Weather, Climate, and Society*, 6 (2), 194–201.
- McIlroy, D., 2015. Idols and Grace: Re-envisioning Political Liberalism as Political Limitism. *Political Theology*.
- McKenzie-Gonzales, G., 2015. Charles Taylor’s Hermeneutical View of the Social Sciences.
- McKibben, B., 2010. *Eaarth: Making a Life on a Tough New Planet*. New York: Henry Holt.
- McKnight, S.A., 1990. The Legitimacy of the Modern Age: The Loewith-Blumenberg Debate in Light of Recent Scholarship. *The Political Science Reviewer*, 19, 177–196.
- McLean, K.C. and Morrison-Cohen, S., 2013. “But Wait, It Gets Even Weirder...”: The

- Meaning of Stories. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 201–212.
- Meadows, D.H., 2009. *Thinking in systems: a primer*. London: Earthscan.
- Meadows, D.H., Meadows, D.L., and Randers, J., 2004. *Limits to Growth: The 30-Year Update*. London: Earthscan.
- Meadows, D.H., Meadows, D.L., Randers, J., and Behrens III, W.W., 1972. *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. London: Earth Island.
- Merchant, C., 1979. *The death of nature: women, ecology, and the scientific revolution*. London: Harper & Row.
- Meyer, H.E., 1979. *The War Against Progress*. New York: Storm King Publishers.
- Meyer, W.B., 2016. *The Progressive Environmental Prometheans: Left-Wing Heralds of a 'Good Anthropocene'*. Not identified: Palgrave Macmillan.
- Meyerhoff, H., 1961. Introduction. In: *Man's Place In Nature*. Boston: Beacon Press.
- Michaels, J.L., Parkin, S.S., and Vallacher, R.R., 2013. Destiny is in the Details: Action Identification in the Construction and Destruction of Meaning. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 103–116.
- Milbank, J., 1990. *Theology and Social Theory: Beyond Secular Reason*. Oxford: Basil Blackwell.
- Mills, C.W., 1956. *The Power Elite*. New York: Oxford University Press.
- Milstein, T., 2009. Environmental communication theories. In: S.W. Littlejohn and K.A. Foss, eds. *Encyclopedia of communication theory*. Los Angeles, Calif: Sage, 344–349.
- Mirowski, P., 1989. *More Heat than Light: Economics as Social Physics, Physics as Nature's Economics*. Cambridge: Cambridge University Press.
- Mirowski, P. and Nik-Khan, E., 2017. *The Knowledge We Have Lost In Information: The History of Information in Modern Economics*. New York: Oxford University Press.
- Mirowski, P. and Plehwe, D., 2015. *The Road from Mont Pèlerin: The Making of the Neoliberal Thought Collective*. 2nd ed. Harvard University Press.
- Mokyr, J., 2017. *A Culture of Growth: The Origins of the Modern Economy*. Oxford: Princeton University Press.
- Mol, A.P.J. and Sonnenfeld, D.A., 2000. Ecological Modernisation Around the World - Introduction. *Environmental Politics* 9(1):3-16, Spring 2000. *Environmental Politics*, 9 (1), 3–16.
- Monbiot, G., 2011. Why Fukushima made me stop worrying and love nuclear power. *The Guardian*, 21 Mar.
- Monbiot, G., 2013. *Feral: searching for enchantment on the frontiers of rewilding*. London: Allen Lane.
- Monbiot, G., 2017. *Out of the wreckage : a new politics for an age of crisis*. London: Verso.
- Monbiot, G., 2018. How US billionaires are fuelling the hard-right cause in Britain | George Monbiot. *The Guardian*, 7 Dec.
- Montefiore, H., 1969. *The Question Mark: The End of Homo Sapiens*. London: Collins.
- Mooney, C., 2005. *The Republican War on Science*. First Printing edition. New York: Basic Books.
- Mooney, C., 2011. *The Science of Why We Don't Believe Science*. *Mother Jones*,

- (May/June).
- Moore, J.W., 2015. *Capitalism in the web of life: ecology and the accumulation of capital*. 1st Edition. London: Verso.
- Moore, P., 2013. *Confessions of a Greenpeace Dropout: The Making of a Sensible Environmentalist*. Revised edn. Vancouver: Beatty Street Publishing.
- Moore, S., 1998. *Julian Simon Remembered: It's A Wonderful Life*. Cato Institute, No. Vol XX, No 2.
- Moore, S. and Laffer, A.B., 2018. *Trumponomics: Inside the America First Plan to Revive Our Economy*. St. Martin's Press.
- Morozov, E., 2019. Digital Socialism? *New Left Review*, 116/117 (March-June 2019), 36.
- Moules, N.J., 2002. Hermeneutic Inquiry: Paying Heed to History and Hermes An Ancestral, Substantive, and Methodological Tale. *International Journal of Qualitative Methods*, 1 (3), 1–21.
- Naam, R., 2013. *The Infinite Resource*. Lebanon, NH: University Press of New England.
- Naess, A., 1973. The shallow and the deep, long-range ecology movement. A summary. *Inquiry*, 16 (1–4), 95–100.
- Nagel, T., 1971. The Absurd. *The Journal of Philosophy*, 68 (20), 716.
- Nelson, R.H., 2002. *Economics as Religion: From Samuelson to Chicago and Beyond*. Penn State Press.
- Neumayer, E., 2013. *Weak versus Strong Sustainability*. 4th ed. Cheltenham: Edward Elgar.
- Newman, S., 2018. *Political Theology: A Critical Introduction*. London: John Wiley & Sons.
- Nordhaus, T. and Shellenberger, M., 2007. *Break Through: Why We Can't Leave Saving the Planet to Environmentalists*. New York: Houghton Mifflin Harcourt.
- Norgaard, K.M., 2011. *Living in Denial: Climate Change, Emotions, and Everyday Life*. Cambridge, Mass: MIT Press.
- Nørgård, J.S., Peet, J., and Ragnarsdóttir, K.V., 2010. The History of The Limits to Growth. *Solutions*, 1 (2), 59–63.
- Norris, P. and Inglehart, R., 2019. *Cultural Backlash: Trump, Brexit, and Authoritarian Populism*. Cambridge University Press.
- North, R.D., 1995. *Life on a Modern Planet: A Manifesto for Progress*. Manchester: Manchester University Press.
- North, R.D., 2005. *Rich is Beautiful*. London: Social Affairs Unit.
- North, R.D., 2007. Stand by for hot air on climate change; One environmentalist says the G8 leaders have few options on global warming. *Evening Standard*, 4 Jun.
- North, R.D., 2018. Interview with Richard D. North. Interviewed by Richard Douglas. (Published as 'Richard D. North's environmental thinking interrogated'). *richarddnorth.com*, 11 Nov.
- Northcott, M., 2015. Eschatology in the Anthropocene: From the chronos of deep time to the kairos of the age of humans. In: C. Hamilton, F. Gemenne, and C. Bonneuil, eds. *The Anthropocene and the Global Environmental Crisis: Rethinking modernity in a new epoch*. Abingdon: Routledge, 100–111.
- Nuccitelli, D., 2013. The 5 stages of climate denial are on display ahead of the IPCC report | Dana Nuccitelli. *The Guardian*, 16 Sep.
- Oberle, B., Bringezu, S., Hatfeld-Dodds, S., Hellweg, S., Schandl, H., Clement, J., Cabenard, L., Che, N., Chen, D., Droz-Georget, H., Ekins, P., Fischer-Kowalski, M., Flörke, M., Frank, S., Foremelt, A., Geschke, A., Haupt, M., Havlik, P.,

- Hüfner, R., Lenzen, M., Lieber, M., Liu, B., Lu, Y., Lutter, S., Mehr, J., Miatto, A., Newth, D., Oberschlep, C., Obersteiner, M., Pfster, S., Piccoli, E., Schaldach, R., Schüngel, J., Sonderegger, T., Sudheshwar, A., Tanikawa, H., van der Voet, E., Walker, C., West, J., Wang, Z., and Zhu, B., 2019. *Global Resources Outlook 2019: Natural Resources for the Future We Want*. Nairobi: International Resource Programme - United Nations Environment Programme.
- O'Brien, H., 2019. Why climate scepticism has a misogyny problem. *New Statesman*.
- O'Connor, J., 1991. On the two contradictions of capitalism. *Capitalism Nature Socialism*, 2 (3), 107–109.
- O'Neill, S.J. and Boykoff, M., 2010. Climate denier, skeptic, or contrarian? *Proceedings of the National Academy of Sciences*, 107 (39), E151–E151.
- Oreskes, N. and Conway, E.M., 2012. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. London: Bloomsbury Publishing.
- O'Riordan, T., 1981. *Environmentalism*. London: Pion.
- Palin, S., 2009a. *Going Rogue: An American Life*. New York: Harper Collins.
- Palin, S. [@SarahPalinUSA], 2009b. Copenhgen=arrogance of man2think we can change nature's ways.MUST b good stewards of God's earth,but arrogant&naive2say man overpwrs nature. *Twitter*.
- Pallister, D., Vidal, J., and Maguire, K., 2000. Life after Living Marxism: Fighting for freedom - to offend, outrage and question everything. *The Guardian*, 8 Jul.
- Palmer, R.E., 1969. *Hermeneutics; Interpretation Theory in Schleiermacher, Dilthey, Heidegger, and Gadamer*. Evanston, Ill.: Northwestern University Press.
- Pankhurst, S., 1923. Socialism. *Workers' Dreadnought*, X (19).
- Parenti, C., 2012. 'The Limits to Growth': A Book That Launched a Movement.
- Passmore, J., 1974. *Man's responsibility for nature: ecological problems and Western traditions*. London: Duckworth.
- Paterson, O., 2014. Owen Paterson: I'm proud of standing up to the green lobby. *The Daily Telegraphy*, 19 Jul.
- Peck, M.S., 1997. *The Road Less Traveled: New Psychology of Love, Traditional Values and Spiritual Growth*. Intl edition. New York: Simon & Schuster.
- Peeples, J., 2015. Discourse/Rhetorical Analysis Approaches to Environment, Media, and Communication. In: A. Hansen and R. Cox, eds. *The Routledge Handbook of Environment and Communication*. Abingdon: Routledge, 39–48.
- Peiser, B., 2017. Interview with Benny Peiser.
- Pendleton, A., 2010. Technology, not targets, will save the planet. *The Sunday Times*, 12 Dec.
- Pendleton, A., 2011. What future for the climatocracy? *Political Climate*.
- Perelman, C. and Olbrechts-Tyteca, L., 1969. *The New Rhetoric: A Treatise on Argumentation*. Notre Dame: University of Notre Dame Press.
- Perlstein, R., 2009. *Before the Storm: Barry Goldwater and the Unmaking of the American Consensus: Barry Goldwater and the Unmasking of the American Consensus*. Reprint edition. New York, NY: Nation Books.
- Phillips, L., 2015. *Austerity Ecology and the Collapse Porn Addicts: A Defence of Growth, Progress, Industry and Stuff*. Alresford: Zero Books.
- Phillips, L., 2019. Interview with Leigh Phillips. Interviewed by Richard Douglas, via email, 1 Mar.
- Phillips, N. and Hardy, C., 2002. *Discourse Analysis: Investigating Processes of Social Construction*. London: SAGE.
- Pielke Jr, R., 2013. Have the climate sceptics really won? *The Guardian*, 24 May.

- Pihlström, S., 2016. *Death and Finitude: Toward a Pragmatic Transcendental Anthropology of Human Limits and Mortality*. Lexington Books.
- Pile, B., 2020. Think, Grenfell in the outback [...]. [online]. *Twitter*. Available from: <https://twitter.com/clim8resistance/status/1214932854855086083> [Accessed 9 Jan 2020].
- Pinker, S., 2019. *Enlightenment Now: The Case for Reason, Science, Humanism and Progress*. London: Penguin.
- Piper, K., 2018. Jeff Bezos and Elon Musk want to colonize space to save humanity [online]. *Vox*. Available from: <https://www.vox.com/future-perfect/2018/10/22/17991736/jeff-bezos-elon-musk-colonizing-mars-moon-space-blue-origin-spacex> [Accessed 8 Jul 2019].
- Pirages, D., 1977. *The Sustainable society: implications for limited growth*. New York: Praeger.
- Plimer, I., 1997. Voice in the Wilderness. *Geoscientist*, 7 (11), 16–17.
- Plumwood, V., 1993. *Feminism and the mastery of nature*. London: Routledge.
- Pollard, S., 1968. *The Idea of progress: history and society*. London: C.A. Watts & Co.
- Poole, E., 2018. Death-defying handbags. *Theos Think Tank*.
- Popper, K.R. and Eccles, J.C., 1977. *The Self and Its Brain*. London: Springer International.
- Postrel, V., 1990. The Green Road to Serfdom. *Reason.com*.
- Postrel, V., 1998. *The Future and Its Enemies: The Growing Conflict Over Creativity, Enterprise, and Progress*. New York: The Free Press.
- Potter, J., 2008. Discourse Analysis. In: L. Given, ed. *The SAGE Encyclopedia of Qualitative Research Methods*. London: Sage.
- Price, G., 1986. Science, idealism and higher education in England: Arnold, Green and Haldane. *Studies in Higher Education*, 11 (1), 5–16.
- Proctor, R. and Schiebinger, L.L., eds., 2008. *Agnotology: the making and unmaking of ignorance*. London: Stanford University Press.
- Proyekt, L., 2005. Spiked-online update. *Louis Proyekt: The Unrepentant Marxist*.
- Proyekt, L., 2019. Trotsky, Bukharin and the Eco-Modernists. *CounterPunch*.
- Rahmstorf, S., 2004. *The Climate Sceptics*. Potsdam: Potsdam Institute for Climate Impact Research.
- Rapley, J., 2017. *Twilight of the Money Gods: Economics as a Religion and How it all Went Wrong*. London: Simon & Schuster.
- Ravaioli, C., 1995. *Economists and the Environment*. London: Zed Books.
- Reagan, R., 1983. Remarks at Convocation Ceremonies at the University of South Carolina in Columbia [online]. *The American Presidency Project*. Available from: <http://www.presidency.ucsb.edu/ws/index.php?pid=40486> [Accessed 2 Oct 2018].
- Reagan, R., 1984. Remarks at a Reagan-Bush Rally in San Diego, California [online]. *Ronald Reagan Presidential Library - National Archives and Records Administration*. Available from: <https://www.reaganlibrary.gov/sspeeches/102284c> [Accessed 2 Oct 2018].
- Reagan, R., 1985. *Ronald Reagan: Second Inaugural Address*.
- Reagan, R., 1988. Remarks and a Question-and-Answer Session With Members of the City Club of Cleveland, Ohio [online]. *Ronald Reagan Presidential Library - National Archives and Records Administration*. Available from: <https://www.reaganlibrary.gov/sspeeches/011188a> [Accessed 2 Oct 2018].
- Ridley, M., 2010. *The Rational Optimist: How prosperity evolves*. London: Fourth Estate.

- Ridley, M., 2020. The Best Books on Technology and Optimism [online]. *Five Books*. Available from: <https://fivebooks.com/best-books/matt-ridley-technology-optimism/> [Accessed 18 Feb 2020].
- Robeyns, I., 2017. Having too much. In: J. Knight and M. Schwartzberg, eds. *Wealth: NOMOS LVIII*. New York: NYU Press, 1–44.
- Roser, M., Ortiz-Ospina, E., and Ritchie, H., 2013. Life Expectancy [online]. *Our World in Data*. Available from: <https://ourworldindata.org/life-expectancy> [Accessed 12 Jun 2020].
- Routledge, C., 2018. *Supernatural: Death, Meaning, and the Power of the Invisible World*. New York: Oxford University Press.
- Rowell, A., 1996. *Green Backlash: Global subversion of the environmental movement*. Routledge: London.
- Royal Society, 2019. Freeman Dyson [online]. *Royal Society Fellows Directory*. Available from: <https://royalsociety.org/people/freeman-dyson-11371/> [Accessed 9 Jul 2019].
- Royal Swedish Academy of Sciences, 2018. The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2018 [online]. *NobelPrize.org*. Available from: <https://www.nobelprize.org/prizes/economic-sciences/2018/press-release/> [Accessed 17 Nov 2018].
- Rozworski, M. and Philips, L., 2019. *People’s Republic of Walmart: How the World’s Biggest Corporations are Laying the Foundation for Socialism*. London ; New York: Verso.
- Runciman, D., 2017. How climate scepticism turned into something more dangerous. *The Guardian*, 7 Jul.
- Russell, J.C. and Blackburn, T.M., 2017. The Rise of Invasive Species Denialism. *Trends in Ecology & Evolution*, 32 (1), 3–6.
- Sarewitz, D., 2011. Liberalism’s Modest Proposals, or The Tyranny of Scientific Rationalism. In: T. Nordhaus and M. Shellenberger, eds. *Love Your Monsters: Postenvironmentalism and the Anthropocene*. Breakthrough Institute.
- Schacht, R., 1990. Philosophical Anthropology: What, Why and How. *Philosophy and Phenomenological Research*, 50, 155.
- Schauerhammer, R., 2002. Why There Really Are No Limits to Growth. *21st Century Science and Technology Magazine*, (Spring).
- Scheler, M., 1961. *Man’s Place In Nature*. Boston: Beacon Press.
- Schmitt, C., 2005. *Political Theology*. Chicago: University of Chicago Press.
- Schnaiberg, A., 1980. *The environment, from surplus to scarcity*. Oxford: Oxford University Press.
- Schneider, S.H., 2011. Contrarians [online]. *climatechange.net*. Available from: https://stephenschneider.stanford.edu/Climate/Climate_Science/Contrarians.html [Accessed 30 Sep 2019].
- Schrödinger, E., 1944. *What is life?* Cambridge: Cambridge University Press.
- Seidengart, J., 2012. Hans Blumenberg, Reader and Interpreter of the Works of Copernicus. *Revue de métaphysique et de morale*, 73 (1), 15–33.
- Sheldon, K.M. and McGregor, H.A., 2000. Extrinsic Value Orientation and “The Tragedy of the Commons”. *Journal of Personality*, 68 (2), 383–411.
- Shostak, S., 2002. *Becoming Immortal: Combining Cloning and Stem-Cell Therapy*. SUNY Press.
- Silverman, D., 1993. *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. London: Sage.
- Simon, J.L., 1981. *The Ultimate Resource*. Princeton: Princeton University Press.

- Simon, J.L., 1996. *The Ultimate Resource 2*. 2nd ed. Chichester: Princeton University Press.
- Sinclair, M., 2011. Let Them Eat Carbon. *Spectator Coffee House*.
- Skinner, Q., 2002. *Visions of Politics: Volume 1: Regarding Method*. Cambridge: Cambridge University Press.
- Small, M., 2018. Climate Science Deniers Respond to IPCC 1.5C Report with Anger, Fear, and Distortion [online]. *DeSmog UK*. Available from: <https://www.desmog.co.uk/2018/10/11/climate-science-deniers-respond-ipcc-report-anger-fear-and-distortion> [Accessed 18 Feb 2020].
- Smil, V., 2019. *Growth: From Microorganisms to Megacities*. Cambridge, MA: MIT Press.
- Smith, N.H., 2004. Taylor and the Hermeneutic Tradition. In: R. Abbey, ed. *Charles Taylor*. Cambridge: Cambridge University Press, 29–51.
- Solomon, S., Greenberg, J., and Pyszczynski, T., 2015. *The Worm at the Core: On the Role of Death in Life*. Allen Lane.
- Solon, O., 2018. Elon Musk: we must colonise Mars to preserve our species in a third world war. *The Guardian*, 11 Mar.
- Spaargaren, G. and Mol, A.P.J., 1992. Sociology, environment, and modernity: Ecological modernization as a theory of social change. *Society & Natural Resources*, 5 (4), 323–344.
- Spragens, T.A., 1973. *The Politics of Motion*. London: University of Kentucky Press.
- de St. Aubin, E., 2013. Generativity and the Meaning of Life. In: J.A. Hicks and C. Routledge, eds. *The Experience of Meaning in Life: Classical Perspectives, Emerging Themes, and Controversies*. London: Springer Science & Business Media, 241–256.
- Standing Up in the Milky Way*, 2014. Episode 1, Cosmos, Mar 9.
- Steffen, W., Richardson, K., Rockström, J., Cornell, S.E., Fetzer, I., Bennett, E.M., Biggs, R., Carpenter, S.R., Vries, W. de, Wit, C.A. de, Folke, C., Gerten, D., Heinke, J., Mace, G.M., Persson, L.M., Ramanathan, V., Reyers, B., and Sörlin, S., 2015. Planetary boundaries: Guiding human development on a changing planet. *Science*, 347 (6223), 1259855.
- Stephens, B., 2018. Apocalypse Not. *The New York Times*, 8 Feb.
- Stern, N., 2009. The point of no return. *The Guardian*, 30 Mar.
- Stevenson, H., 2015. Contemporary Discourses of Green Political Economy: A Q Method Analysis. *Journal of Environmental Policy & Planning*, 0 (0), 1–21.
- Stoll-Kleemann, S., O’Riordan, T., and Jaeger, C.C., 2001. The psychology of denial concerning climate mitigation measures: evidence from Swiss focus groups. *Global Environmental Change*, 11 (2), 107–117.
- Stott, P., 2003. You can’t control the climate: reducing carbon emissions in the hope this will stop global warming is a flawed idea, argues Philip Stott. Better to react to climate change as it happens. *New Scientist*.
- Stradaoli, N., 2005. Philosophical Anthropology: Voegelin’s debt to Max Scheler. In: *Dimensions of Voegelin’s Philosophy and Its Reception*. Presented at the Eric Voegelin Society conference, Washington, D.C., 18.
- Styfals, W., 2014. The Eternal Return of Gnosticism? Secularization and the Problem of Evil. In: S. Latré, W.V. Herck, and G. Vanheeswijck, eds. *Radical Secularization?: An Inquiry into the Religious Roots of Secular Culture*. New York: Bloomsbury, 17–31.
- Sweet, M., 2018. *Operation Chaos: The Vietnam Deserters Who Fought the CIA, the Brainwashers, and Themselves*. Amazon.co.uk: Sweet, Matthew:

- 9781447294733: *Books*. London: Picador.
- Sweet, M., 2019. Matthew Sweet on Twitter: ‘The LaRouchies have been enemies of the green movement for decades. They used to carry signs that read “Feed Jane Fonda to the whales”. It’s linked with their conspiracy theory about the Queen’s “green fascism”. Piers Corbyn, by the way, was a member of their Facebook group.’ [online]. *Twitter*. Available from: <https://twitter.com/DrMatthewSweet/status/1180000523912728576> [Accessed 30 Jun 2020].
- Switzer, J.V., 1997. *Green Backlash: The History and Politics of Environmental Opposition in the U.S.* London: Lynne Rienner.
- Tattersall, M., 2014. Thermal Degeneration: Thermodynamics and the Heat-Death of the Universe in Victorian Science, Philosophy, and Culture. In: M. Härmänmaa and C. Nissen, eds. *Decadence, Degeneration, and the End: Studies in the European Fin de Siècle*. New York: Palgrave Macmillan US, 17–34.
- Taubes, J., 2009. *Occidental Eschatology*. Stanford, Calif.: Stanford University Press.
- Taylor, C., 1981. Understanding and Explanation in the Geisteswissenschaften. In: S.H. Holtzman and C. Leich, eds. *Wittgenstein: to Follow a Rule*. London: Routledge.
- Taylor, C., 1985a. *Philosophy and the Human Sciences*. Cambridge: Cambridge University Press.
- Taylor, C., 1985b. *Philosophical Papers: Volume 1, Human Agency and Language*. Cambridge: Cambridge University Press.
- Taylor, C., 2003. Ethics and Ontology. *The Journal of Philosophy*, 100 (6), 305–320.
- Taylor, C., 2007. *A Secular Age*. London: Belknap Press.
- Taylor, C., 2017. Philosophy as Philosophical Anthropology. In: A. Waldow and N. DeSouza, eds. *Herder: Philosophy and Anthropology*. Oxford University Press, 13–29.
- Taylor, C., 2019. How asteroid mining will save the Earth — and mint trillionaires [online]. *Mashable*. Available from: <https://mashable.com/feature/asteroid-mining-space-economy/> [Accessed 8 Jul 2019].
- Tester, K., 2018. The eclipse of metaphysics. In: S. James, ed. *Metaphysical sociology: on the work of John Carroll*. London: Routledge, 80–94.
- Thurrow, L.C., 1981. *The Zero-Sum Society*. Harmondsworth: Penguin.
- Tipler, F.J., 1994. *The physics of immortality: modern cosmology, God and the resurrection of the dead / Frank J. Tipler*. Basingstoke: Macmillan.
- Tipler, F.J., 1998. There Are No Limits To The Open Society. *Critical Rationalist*, 3 (2).
- Toscano, A., 2010. *Fanaticism: On the Uses of an Idea*. London: Verso.
- Trifonov, E.N., 2011. Vocabulary of Definitions of Life Suggests a Definition. *Journal of Biomolecular Structure and Dynamics*, 29 (2), 259–266.
- Trotsky, L., 1974. *Radio, Science, Technique, and Society*. London: New Park Publications.
- Turner, G., 2014. *Is global collapse imminent?: An Updated Comparison of The Limits to Growth with Historical Data*. Melbourne: Melbourne Sustainable Society Institute, University of Melbourne, No. 4.
- Van Rensburg, W., 2015. Climate Change Scepticism: A Conceptual Re-Evaluation. *SAGE Open*, 5 (2), 215824401557972.
- Vieira, P., 2018. Trading Our Way out of War: Perpetual Peace without Politics. *Revista Crítica de Ciências Sociais*, (116), 5–22.
- Viner, J., 2015. *The Role of Providence in the Social Order: An Essay in Intellectual*

- History*. Princeton University Press.
- Voegelin, E., 1948. The Origins of Scientism. *Social Research*, 15 (4), 462–494.
- Voegelin, E., 1987. *The New Science of Politics: An Introduction*. London: University of Chicago Press.
- Voegelin, E., 1998. *History of political ideas, Vol.5: Religion and the rise of modernity*. London: University of Missouri Press.
- Voegelin, E., 1999. *In Search of Order*. London: University of Missouri Press.
- Voegelin, E., 2000. The Political Religions. In: *Modernity without restraint*. Columbia: University of Missouri Press, 19–74.
- Voltaire, 1877. *Oeuvres complètes de Voltaire: La pucelle. Petits poèmes*. Paris: Garnier frères.
- Voltaire, F., 2006. *Candide, or Optimism*. London: Penguin Classics.
- Wagner, P., 2001. *Theorizing modernity: inescapability and attainability in social theory*. London: Sage Publications.
- Wallace, R.M., 1985. Translator's Introduction. In: *The Legitimacy of the Modern Age*. Cambridge, Mass: MIT Press.
- Wallace-Wells, D., 2019. *The Uninhabitable Earth: A Story of the Future*. London: Allen Lane.
- Washington, H. and Cook, J., 2011. *Climate change denial: heads in the sand*. London: Earthscan.
- Wattenberg, B., 1998. Malthus, Watch Out. *Wall Street Journal*, 11 Feb.
- Weber, M., 1946. The Psychology of the World Religions. In: H.H. Gerth and C.W. Mills, eds. *From Max Weber: Essays in Sociology*. New York: Oxford University Press, 267–301.
- Weber, M., 2009. *The Protestant Ethic and the Spirit of Capitalism*. Oxford: Oxford University Press.
- Weizsäcker, C.F. von, 1964. *The relevance of science: creation and cosmogony*. Collins.
- Whisenhunt, D.W., 1974. *The Environment and the American Experience*. Port Washington: Kennikat Press.
- White, L., 1967. The Historical Roots of Our Ecologic Crisis. *Science*, 155 (3767), 1203–1207.
- Whitehead, A.N., 2011. *Science and the Modern World*. Cambridge: Cambridge University Press.
- Whitmarsh, L., 2011. Scepticism and uncertainty about climate change: Dimensions, determinants and change over time. *Global Environmental Change*, 21 (2), 690–700.
- Whittell, G., 2005. Save the world: ignore the ecogeeks. *The Times*, 1 Jan.
- Williams, A., 2008. *The Enemies of Progress: The Dangers of Sustainability*. Exeter: Societas Imprint Academic.
- Williams, A. and Srnicek, N., 2013. #ACCELERATE MANIFESTO for an Accelerationist Politics. *Critical Legal Thinking*.
- Willig, C., 2013. *Introducing Qualitative Research in Psychology*. 3rd ed. Maidenhead: Open University Press.
- Worstell, T., 2010. *Chasing Rainbows: How the Green Agenda Defeats Its Aims*. London: Stacey International.
- Worstell, T., 2019. Interview with Tim Worstell. Interviewed by Richard Douglas, via email, 29 Jan.
- Xu, Y. and Ramanathan, V., 2017. Well below 2 °C: Mitigation strategies for avoiding dangerous to catastrophic climate changes. *Proceedings of the National*

Academy of Sciences, 114 (39), 10315–10323.

Yalom, I., 1980. *Existential Psychotherapy*. 1st Edition edition. New York: Basic Books.

Zerubavel, E., 2006. *The Elephant in the Room: Silence and Denial in Everyday Life*. Oxford: Oxford University Press.