From environmental Malthusianism to ecological modernisation: toward a genealogy of sustainability

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Abstract

This is a genealogy of sustainability. It begins with a single discontinuity, observed throughout the literature: that there was once environmental Malthusianism, but now there is ecological modernisation. By working outward from this discontinuity, it is possible to trace the most significant events in the history of sustainability, from its emergence in thought and discourse, through to its present form. The discontinuity itself took the form of a three-stage process: the fall of Malthusianism, the vacuum it left behind, and the rise of ecological modernisation. In order to understand the fall of environmental Malthusianism it is necessary to trace its descent and unpick its emergence; in order to understand the rise of ecological modernisation, it is necessary to discern the conditions of possibility and the unique characteristics that determined its success. The story begins *circa* 1920, with the birth of ecology, and the ecological problematisation it brought with it. Ecology not only gave us 'the' environment as a single ontological object—and the environmentalism that seeks to protect it—but also provided us with the language and concepts with which to problematise our relationship with it. The first expression of this problematisation was environmental Malthusianism, but Malthusianism itself was a problematic discourse, built upon a relation of power exercised over women. With the rise of feminism came the fall of Malthusianism, and the vacuum in environmental politics was made. By then several decades had passed, and the vacuum was shaped by the political context of the 1980s. The new discourse of environmental politics had to be sufficiently different from its toxic predecessor, sufficiently developed as a policy discourse, and sufficiently compatible with the nascent politics of the time—and ecological modernisation was an ideal fit. What this genealogy shows is that the roots of sustainability are to be found in the ecological problematisation, and that its trajectory has been shaped by events that were often only indirectly related. Sustainability is a product of historical contingency; to understand sustainability is to understand the contingencies that determined its emergence.

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Abbreviations

BMA   The British Medical Association

ECOSOC   The United Nations Economic and Social Council

IUCN   The International Union for Conservation of Nature

OECD   The Organization for Economic Co-operation and Development

UNCED   The United Nations Conference on Environment and Development

UNCHE   The United Nations Conference on the Human Environment

UNDESA   The United Nations Department of Economic and Social Affairs

UNEP   The United Nations Environment Programme

UNESCO   The United Nations Educational, Scientific and Cultural Organization

UNGA   The United Nations General Assembly

UNICPD   The United Nations International Conference on Population and Development

US   The United States of America

WCED   The World Commission on Environment and Development

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Introduction

Foucault detested nature. Whenever she showed him some magnificent landscape—a lake sparkling in the sunlight—he made a great show of walking off toward the road, saying, 'My back is turned to it.'

(Eribon, 1991, p. 46)

There is a common observation made throughout the sustainability literature: that there was once environmental Malthusianism, but now there is ecological modernisation. The observation is common, but its explanation is not. It seemed to me that such a momentous event demanded a correspondingly weighty explanation. I wanted to delve into this discontinuity and explain the historical change, primarily as a philosophical exercise—to produce knowledge for its own sake and to satisfy my own curiosity—but also as a means of understanding the mechanisms of social and political change as they relate to sustainability; change being, ironically, one of sustainability's greatest challenges.

There was a fairly haphazard process in the lead up to this well-defined problem, working through many less-well-defined problems along the way. I had initially entered via the topic of 'sustainable consumption', with a view to researching its history in both theory and practice. It was within the sustainable consumption literature that I first happened upon the discontinuity between environmental Malthusianism and ecological modernisation—and first questioned the mismatch in magnitude between the observation made and the explanation given. The chapter in question was written by Cohen (2001), and it became the genesis of this research. Cohen set out the accepted wisdom that there was once environmental Malthusianism, but now instead there is ecological modernisation, but he was writing for another purpose, and within the space constraints of a single chapter, so I was left with more questions than answers. The who, why, what, where, when, and how of this momentous shift were reduced to a brief summary of events—the precise mechanisms of change remaining obscured. My curiosity was piqued.

What follows is a genealogy of sustainability, centred on a single discontinuity: between environmental Malthusianism and ecological modernisation. The genealogy of sustainability in its entirety is too vast for the pages of a single volume, but by working outward from this discontinuity, we gain access to the most important events in sustainability's development, from its emergence in thought and discourse, to the events that determined its present form. The discontinuity itself occurred during the late 1970s and early 1980s, but the nature of genealogy is such that the location of events in time are rarely situated alongside their root causes—for that we must look further back. To understand the fall of environmental Malthusianism, it is necessary to trace its descent and unpick its emergence; to understand the rise of ecological modernisation, we must discern the conditions that made it possible and the unique characteristics that determined its entry. There have been glimmers of these elements going back centuries, but the real story begins *circa* 1920, with the birth of ecology, and the ecological problematisation it brought with it.

Over the course of these pages, I shall lay out the thread of an argument, beginning with the birth of ecology, and culminating in the thing we call sustainability, as it exists in the present. Ecology did not appear out of nowhere; it was made by people who brought their existing knowledge with them. Nor was ecology born into an empty world; it entered a *milieu* filled with existing constellations of knowledge and power. The Malthusianism that suffused governmental rationality in the early 20th century was slow to recognise the problematisation brought by ecology, but when it did, it set in motion a series of events that would define the latter half of the century. It was historical contingency that gave the earliest ecological problematisations their Malthusian bearing, but history never stops, and the conflicts within and against Malthusianism would force new directions and forge new paths. The fall of Malthusianism was by no means inevitable—nothing in the history of sustainability was inevitable—it was the result of a sustained and multifaceted struggle, of shifting strategies and allegiances, and of newly emergent relations of power, which altered the balance and changed the course of events.

The rise of ecological modernisation was also contingent upon this history. The vacuum in environmental politics left by the collapse of Malthusianism served as an opportunity for a different type of environmentalism—leading to a different vision of sustainability. Sufficiently distanced from the toxic legacy of environmental Malthusianism, sufficiently developed as an environmentalist discourse, and sufficiently

compatible with the political winds of the 1980s, ecological modernisation remade the environmental movement.

No longer just a radical outsider marked by protest and critique, ecology is now part of the discourse of modernity. Ecological modernisation will have—and has had—its own battles to fight, and the future of sustainability is yet to unfold, but as I write these words, ecological modernisation is the dominant discourse of environmental politics, and ecology is still the fly in the ointment that forces us to rethink our practices as a society and as a species. This genealogy is not everything sustainability is or has ever been, but it cuts a slice through the heartwood to reveal the story of its growth, from the first green shoots to the latest burr.

1.1   The objects and scope of my analysis

When I use the word 'sustainability', I use it in a very specific way. Firstly, I refer to a mode of thought and of self-reflection, which is unique to our present. The knowledge that the human species is not eternal, combined with the knowledge that we can—and on our current course most likely will—bring about our own extinction, has created an existential crisis quite unlike any other in our history. It is not the *eschaton*, preordained by a god who can neither be stopped nor reasoned with; nor is it the nuclear winter, a single, unconscionable political failure that is, thankfully, the exception, not the rule; rather, the crisis of sustainability is the cumulative result of ordinary people going about their lives, trying to improve their lot for themselves and their families. It is everyday life, around which society is built, and upon which society depends. The crisis confronted by sustainability is not borne of an external threat or an exceptional event, it is the prospect that simply by being alive in the world, and doing nothing special, we might all be complicit in our own demise.

Secondly, in a more analytic sense, by 'sustainability' I mean the range of discursive and non-discursive practices that have come into existence, or have been repurposed, in response to the problematisations that emerge from this existential crisis. In recent years, the word sustainability has been used in a fairly consistent way to refer to such practices, but historically this has not been the case. In the course of my research I have come to understand that contemporary sustainability began with the birth of ecology. Ecological knowledge about the natural world not only opened up a plethora of

problems that human activities could cause, but also provided a language and framework with which to conceptualise and discuss those problems. Throughout the 20th century there have been many responses to the ecological problematisation that have not specifically used the word sustainability, but in retrospect clearly fit within this category. Thus, when I use the word 'sustainability', I use it to describe our collective responses to the ecological problematisation over the course of the last century—whether the word appeared alongside or not.

My approach will display, for some at least, a noticeable bias toward environmental sustainability. Those who subscribe to the famous Brundtland definition of sustainable development (WCED, 1987), may rightly wonder why I pay such scant attention to the social and economic dimensions of the sustainability triad. The answer is simple: as a result of my studies I have come to believe that, from a historical perspective, ecological limits are the basis and the cause of most—if not all—of the problems we corral under the heading of sustainability. Programmes of social and economic development were already well established before the ecological problematisation knocked them off balance. Development—synonymous with economic growth—was set to continue unabated before coming into conflict with environmental politics. Sustainable development is the latest in a series of attempts to reconcile this conflict between environment and development—a conflict which would never have occurred without the crises that accompanied the birth of ecology. Ecology is the language of problematisation, the instigator of conflict, and the limiter of growth for what would have been an unhindered—or less-hindered—history of social and economic development. To my eyes, the ecological problematisation is the spark and the flame of sustainability; it is the centre and the foundation—an argument I shall attempt to bolster throughout the present work.

The assertion that sustainability began with the birth of ecology in the early 20th century is not without contention. The prevailing view in the literature is that sustainability can be traced back much further, to the turn of the 18th century (Caradonna, 2014; Chappells and Trentmann, 2015; Grober, 2012), or even as early as the 14th century (Warde, 2011). These examples take the form of agricultural and arboricultural techniques (notably von Carlowitz, 1732), designed to produce a 'sustained-yield' for harvest. The reason I diverge from this opinion is the simple fact that there is more to sustainability than resource management. As I have outlined above, the sustainability of our present is distinctly existential in character. It concerns the entire species and our

continued existence. The ecological problematisation brought with it the interconnection of all life, the finitude of the Earth, and the fragility of the global ecosystem—our life support system. As an analytic category, sustainability is a planetary, species-wide, existential problematic; the praxis of sustaining material throughput for fuel and food covers only a sliver of these criteria.

My analysis of sustainability begins with the discontinuity between environmental Malthusianism and ecological modernisation—each of which has a strong presence in the literature. There is no shortage of books and articles about Malthus. Tomes on the man, his work, and his legacy are numerous (Flew, 1970; Mayhew, 2014; Micklewright, 1961)—not to mention the many polemics that rail against him (*cf.* Chase, 1975; Connelly, 2008; Greene, 1999). I am acutely aware that, on the Malthusian front at least, I enter into an old literature where the opportunities for original contributions are marginal. But the purpose of this research is not to re-write the history of Malthusianism; this is a history of sustainability, and only those moments in which Malthus bumps up against it are of significance. As it happens, this approach has produced some new and interesting insights into the history of Malthusianism itself, embellishing that marginal space with colour and detail, but those insights serve only to further the current work, and are presented here only as they relate to the genealogy of sustainability.

The specific strand under analysis here is, of course, environmental Malthusianism. The term is often used interchangeably with neo-Malthusianism, but I will argue for a strong distinction between the two. Environmental Malthusianism may be part of neo-Malthusianism to the extent that it problematises population growth and accepts a broad range of solutions, but environmental Malthusianism has its own distinct history, and a very particular form of problematisation, which extends beyond the social effects of population growth and the management of natural resources, into a global ecological ontology. It is these distinct features of environmental Malthusianism that are of most interest to the present study.

Ecological modernisation is also well represented—though perhaps not to the same extent, being a much more recent phenomenon. It falls into two broad categories: ecological modernisation as *policy practice*, dealing with the empirical analysis of environmental policy in the industrialised world; and ecological modernisation as *social theory*, which is to say a 'theory of modernity', dealing with the ways in which ecology has become fundamental to the concept of modernity. Whilst I am interested in the social theory of ecological modernisation for its scholarly value, my analysis and discussion are,

for the most part, concerned with practices—practices of government, policy making practice, discursive and non-discursive practices relating to ecological modernisation. As such, the theory of ecological modernisation as a theory of modernity informs my thought, but is not the object of my analysis. Crucially, however, I situate ecological modernisation as the end point of the genealogy. As such, I pay more attention to the events that led up to it than the practices of ecological modernisation itself. I am interested in its conditions of possibility, and the many conflicts, accidents, and opportunities that created those conditions, and for that, I have looked to life before ecological modernisation's emergence, not after.

1.2   My methods and approach

This is not a conventional work of historiography and I do not consider myself to be a historian. To paraphrase Foucault (1985, p. 9), this is a study of 'history' inasmuch as it operates within a historical domain, but it is not the work of a 'historian'; it is a philosophical exercise, designed to reveal the extent to which thinking about our past can free us to think differently about our present. Using Foucault's genealogical method to study sustainability is not an immediately obvious or clear-cut choice. As the opening quote of this introduction implies, Foucault himself might not have cared for such a venture. Foucault saw 'nature'—and acts carried out in its name—as an attempt to establish a form of transcendental universalism, immune to critique, and forming the basis of a tyranny that cannot be questioned (Revel, 2014). If embarking on a genealogy of sustainability, it cannot be in defence of, nor for the advancement of, sustainability as a political project; it can only be to interrogate it—along with the nature it seeks to sustain—to reveal sustainability as the historically contingent political formation it must surely be.

This complication need not preclude such research, but it does bid caution. The question of what is to be achieved by deploying Foucault in this field looms large. There are some who would use Foucault's concept of 'bio-politics'—a governmental rationality that takes the biological species as its point of reference—to explain sustainability, and how it came to be integrated with modernity (Death and Gabay, 2015; Malette, 2009). There are others who would mobilise Foucault as a means of affecting social change by intervening in practices (Alexander, 2012). But for my own purposes, it is not the

usefulness of Foucault's concepts, nor how he can be instrumentalised, that draws me to genealogy; it is simply the prospect of a philosophical exercise which, by casting our thought to events in the past, can free us to think differently in the present.

Genealogy lends itself to topics that are fundamental to the ways in which we think of ourselves. The two topics Foucault explored in his genealogies were 'sexuality'—encompassing both the sexual politics of society and the sexual identity of the individual (1978; 1985; 1986)—and what could broadly be described as 'delinquency'—criminality, deviancy, and the subsequent methods of correction (1977). Sustainability is one such topic. It has become the defining existential prism of our present. It is not the first way in which we have thought of ourselves as a species—of our shared condition, of our common future—nor is it the first time we have contemplated our possible demise, but right now, at this moment in history, it is the most prominent discourse by which humanity situates itself in time, in nature, and in the cosmos. Sustainability is the problematisation of our present; this genealogy is the history of that present.

In laying out the reasoning for his own genealogical work, Nietzsche proclaimed: "Only that which has no history is definable" (1967, p. 80). Written without fanfare, but with profound and far reaching implications, this one short epigram lays bare the necessity of genealogy: to understand that which *does* have a history; whose definition cannot be fixed in time. Sustainability is a concept that defies definition. Its meaning is notoriously slippery, a trait for which it is simultaneously praised for its broad appeal and condemned as an empty gesture (Robinson, 2004). Ownership is claimed by idealists and pragmatists; radicals and conservatives; liberals and authoritarians alike. This promiscuous term can mean all things to all people—and consequently mean nothing to anyone. The reason sustainability is not definable is that it has a history. To understand sustainability, one must understand it not as a snapshot in its current state, but as a historical process; not as a free-floating concept, but as an emergent, contingent construction. To understand sustainability in the present, we must look to its genealogy.

1.3   My key findings

The history of sustainability has not been determined by a process of awakening and enlightenment, nor has it been advanced by continual improvement and refinement; it has

been determined by a series of conflicts, played out at the nexus of knowledge and power. Each individual conflict rolls into the next in a domino effect, each prefigured by the last, forming a haphazard progression with an indeterminate future. My story begins with the birth of ecology, a knowledge formation that gave humanity the tools with which to reconsider its place in the world. The politics of ecology became entwined with the prevailing politics of the time. Thus, by pure historical accident, Malthusianism and eugenics made the modern environmental movement in their own image, and environmental Malthusianism was born.

No sooner had environmental Malthusianism emerged than eugenics began its decline. The biological elitism that underpinned the eugenic movement fell out of favour with the younger generation of environmentalists, and a new biologically universalist form of environmental Malthusianism emerged. Under this new rubric, every human being shared equal rights, and equal responsibility for the ecological crisis; a species-wide answer to a species-wide problem. But the rejection of biological elitism had an additional consequence. As more and more women took their place in positions of influence, women's rights gained recognition and representation in politics and public life. There was no avoiding the fact that population control would always end in the exercise of power over women, thus ultimately, the rise of feminism brought about the fall of environmental Malthusianism. This left a vacuum in environmental politics, making way for a new kind of environmentalism in the form of ecological modernisation.

The transition from environmental Malthusianism was a three-stage process: the fall of environmental Malthusianism, the vacuum it left behind in environmental politics, and the rise of ecological modernisation to fill the vacuum. Whilst the fall of environmental Malthusianism can be attributed to many intersecting factors, the results of my genealogical analysis point to the rise of feminism as the most significant determinant. All forms of Malthusianism are predicated on a relation of power between a governing authority and the bodies of women. The rise of feminism, in terms of both political discourse and the ascent of women to platforms of agenda setting and decision making, made that relation of power untenable, and so the foundation of all Malthusianisms gave way—environmental Malthusianism included.

The fall of environmental Malthusianism left a vacuum in environmental politics because the modern environmental movement was so tightly knit with Malthusian discourse. Neo-Malthusian beliefs had been embedded in the institutions of society for much of the 20th century, and when combined with the modern environmental movement,

environmental politics in the 1970s had become something of a monolithic force. When its keystone crumbled, it had little in the way of resilience or diversity to mitigate the collapse. The environmental movement had lost its dominant discourse, and its polity, such was the form of the vacuum.

Ecological modernisation had been quietly developing, in think tanks and policy fora, but lacked widespread support in a movement dominated by alarmist and often radical Malthusian rhetoric. With the fall of environmental Malthusianism, however, and the subsequent vacuum in environmental politics, ecological modernisation gained an opportunity to flourish. Ecological modernisation had some unique qualities that made it a suitable successor: it was sufficiently different from environmental Malthusianism, and so not associated with its toxic legacy; it was sufficiently developed in theory and practice, and so ready to be adopted by the environmental polity; and it was sufficiently compatible with the nascent political context of the time: the rise of the New Right.

If Malthusianism and eugenics had not dominated governmental rationality at the birth of ecology, then the environmental movement would have been something else entirely. It is quite possible that something resembling ecological modernisation could have arisen instead, but likewise, it could have been something unimaginable to us. Similarly, if biological elitism had prevailed over its interlocutors, then sustainability could have become a very ugly word indeed. The discourse of early environmental Malthusians was suffused with eugenics and a callous disregard for people in the developing world. Without the rejection of biological elitism, 'sustainable development' might very well have become a genocidal regime waging a new World War against the poorest half of the population—all in the name of ecological limits. These are not the outcomes that came to pass, but they illustrate the importance of historical contingency when seeking understand social and political transformation. The present we now experience was in no way inevitable, it is borne of the conflicts of the past, just as the future will be contingent upon the conflicts of the present.

1.4   The outline of my research

This is a genealogy of sustainability. It is intended as a means of understanding the constitution of sustainability in the present, by looking to the inventions, contentions, deviations, and contortions of its past. I have chosen a single discontinuity between

environmental Malthusianism and ecological modernisation as a way in—as the starting point and the boundary of my investigation—but this does not represent the full extent of sustainability's genealogy; it is merely a single slice, a line of sight. Thus, over the course of these pages, I have focussed on the specific objects and events leading up to the discontinuity in question, but at all times the insights gained and assertions made are intended to sketch the outlines of a larger project, to paint a picture of the genealogy of sustainability as a whole.

Chapter 2 constitutes my survey of the existing literature, but the result is as much literary analysis as it is literature review. I have identified four narratives of change, recurrent throughout the literature, that authors have used to explain the transition from environmental Malthusianism to ecological modernisation. Narrative historiography is a common way of relaying knowledge about the past, and I have extracted these narratives from amidst a medley of others covering every aspect of sustainability. The four narratives have seldom been presented specifically for the purpose of explaining the discontinuity at the centre of this research, so I have exercised a certain amount of licence in extracting or reconstructing them from an array of sources—occasionally historians of sustainability; occasionally scholars from other disciplines using history as a means to understand some other facet of sustainability. The four narratives are not exclusive of one another; they exist in tandem, occasionally interacting, always in each other's presence. A historiographical narrative is not the sum total of knowledge at a certain time in history; it is a single thread, pulled to align a series of events, designed to create clarity and aid understanding. The four narratives of change serve to represent the state of existing knowledge, but they also serve as an analytic framework. They offer a means of looking at new material as I find it, and of situating my own findings within a story that is much larger than this single volume. I do not mean to replace the four narratives, nor to pick a winner; only to expand them, to embroider them, and to carve myself a niche within.

Chapter 3 is a detailed exposition of my methodology. The literature on Foucauldian genealogy is utterly vast, and I have no wish—nor ample space—to recount it in full. Rather, I have provided a streamlined account, which covers only those aspects of Foucault's methodology that I have actually used. The result is not slender, but this is a heavily theoretical piece—and Foucault's theory is heavy to begin with. I have, where possible, attempted to balance the theory with the actual praxis of genealogical research. This was not always easy. The practical work of genealogy occurs mainly in the archaeological phase—archival work that demands a "vast accumulation of source

material" (Foucault, 1984, pp. 76–77). But beyond the collection of data, the genealogy itself exists in the application of analytics; it is a philosophical practice, composed of thinking and writing. Thus, in my description of the archaeological element, I have given a detailed account of my research praxis; but in my description of genealogy, I have devoted more time to the content and purpose of Foucault's analytics, along with an account of how and where I have applied them. There are very few examples of this methodological approach used elsewhere in the study of sustainability, so I hope that my contribution will open up some new possibilities, and generate interest in this underdeveloped field.

Chapter 4 opens the genealogy, by charting the emergence of environmental Malthusianism. I begin by locating environmental Malthusianism, first of all by analysing the structure of Malthusian thought, and then by distinguishing the environmental form from other versions of Malthusianism. There is a tendency in the literature to conflate neo-Malthusianism and environmental Malthusianism, but I argue for a strong distinction. Environmental Malthusianism is based on a problematisation that extends beyond human suffering and class distinction into the non-human natural world; beyond local resource management into a global ecological ontology. The birth of ecology in the early 20th century produced a new ontology that transformed the way humanity thinks of itself in relation to non-human nature, and it was from this momentous shift that environmental Malthusianism emerged. Conventional Malthusian problematics on environmental limits and population irruption were completely reconceptualised in light of the ecological ontology, and environmental Malthusianism was the result.

Chapter 5 charts the discourse of environmental Malthusianism across the latter half of the 20th century, identifying three distinct generations of environmental Malthusian politics. The first generation was marked by its eugenic undertones. A belief in eugenics was not unusual throughout the first half of the 20th century, so it is unsurprising that environmental Malthusianism inherited this trait, but eugenics soon became contentious, its inherent biological elitism necessarily manifesting in racist, classist, and sexist attitudes. In the late 1960s, a new, younger generation of environmentalists sought to dissociate themselves from such outmoded views, and rejected biological elitism out of hand. But they still feared the effects of overpopulation, and attempted to craft a more progressive second-generation environmental Malthusianism. Their plans were short lived, however. Malthusianism could never shake the stigma of its eugenicist past, and the life of second-generation environmental

Malthusianism was marked by dispute and mistrust over the true intentions of environmentalists. But the rejection of biological elitism had another, unforeseen consequence; as sexism was brought under the spotlight and feminist critique turned to the politics of Malthusianism, the entire concept of the population problem was reconsidered, leading to a third-generation environmental Malthusianism, which attempted to incorporate the feminist critique.

Chapter 6 delves into the underappreciated effects of feminism on the history of environmentalist thought. There is a basic relation of power at the foundation of all forms of Malthusianism; the relation of power between Malthusians and women. The control of reproduction necessarily ends in the control of women's bodies—no matter where or how the intervention begins—and as women began to take their place as leaders and decision makers, the acceptability of openly planning the control of women's bodies became anathema. With the loss of its fundamental relation of power, Malthusianism lost its place in the world, and was ceded to alternative understandings of population and the role of women therein. Environmental Malthusianism had been the dominant discourse of environmentalism, and the collapse of Malthusianism created a vacuum in environmental politics. It was only the creation of this vacuum that opened up the opportunity—the necessity—for an alternative environmentalist discourse, and ecological modernisation was ready, willing, and able to take up the challenge. The effects of feminism played an indirect but decisive role in the transformation of environmental politics, and remains an underappreciated determinant in the history of environmentalist thought.

Chapter 7 closes the genealogy with a discussion about ecological modernisation and its entry into the vacuum of environmental politics. There is agreement across the literature that this took the form of a three-stage process—the fall of environmental Malthusianism, the vacuum it left behind, then the rise of ecological modernisation—but where I concentrate my discussion is the conditions of possibility that made ecological modernisation an appropriate successor as the dominant discourse of environmental politics. I identify three basic qualifications: firstly, it was sufficiently distanced from environmental Malthusianism's toxic legacy; secondly, it was sufficiently developed as an environmentalist discourse; and thirdly, it was sufficiently compatible with the political context of the time—that context being the neo-liberalism of the 1980s. Emerging around the same time, each being the dominant discourse in their respective fields, ecological modernisation and neo-liberalism have a complicated relationship. Ecological modernisation is not a neo-liberal form of environmentalism, but they do share

an affinity, and despite their many differences, neo-liberalism is the *sine qua non* of ecological modernisation. It was the early efforts to govern pollution using market mechanisms, developed at the beginning of the 1970s, that made ecological modernisation thinkable, and so when the opportunity arose—when the fall of environmental Malthusianism left a vacuum in environmental politics—ecological modernisation was able to seize it.

2

Literature review: four narratives of change from environmental Malthusianism to ecological modernisation

Genealogy presents a problem that must be dealt with from the outset: if the research itself is an analysis of literature, then what is the role of a literature review? The literature review is still an indispensable component of the research, it merely requires a precise definition and a rigorous method of categorising and conceptualising different types and uses of texts. To this end I shall lay out the narrow purpose of the literature review and how it differs from the larger enterprise of genealogy by using two 'guiding distinctions' (Åkerstrøm Andersen, 2003, p. vi), which enable me to think about how individual texts function. The first is a distinction between text as *analysis of object* and text as *object of analysis*; the second is a distinction between text viewed from *inside the field* and text viewed from *outside the field* of study. With these tools, I can produce a literature review which is both distinct from, and complementary to, the work of genealogy.

To deploy these two guiding distinctions, I must first identify my own objects of analysis and field of study. I know of no instances where others have asked the exact same questions that I ask, or combined the same parts to form the same object or set of objects, but many have looked at the component parts in other combinations. The greater project to which this research belongs is the genealogy of sustainability, but the entry point into the genealogy is through a single discontinuity—acknowledged throughout the sustainability literature—between environmental Malthusianism and ecological modernisation. These will constitute my initial objects of analysis.

The first object of analysis is *environmental Malthusianism*. There are various common expressions of Malthusianism such as classical, neo-, and environmental, which are all part of a centuries-old process that Dean (2015) has labelled the 'Malthus effect'.

This pitting of population against resources has been adapted and repurposed toward many ends—rarely in ways of which Malthus himself would have approved—but the basic conceptual dichotomy has survived: population growth *versus* material finitude.

The eponymous theory of the Rev. Thomas Robert Malthus, referred to here as 'classical Malthusianism', was only really prominent within Malthus' own lifetime, and was marked by a deeply religious moral basis. The essential problem, as Malthus saw it, was not the number of people as such, but the human suffering that occurred when the population grew faster than the food supply. He believed that natural checks to population numbers in the form of conflict, disease, and starvation were inevitable, and the best way to avoid such suffering was to reduce population growth among those who could least afford it. Malthus' solution, on that same religious moral basis, was simple abstinence; only by living a life free from vice and sin could catastrophe be averted (Malthus, 1798; 1826; see also Flew, 1970). Shortly after Malthus produced his famous essay, many thinkers and activists agreed that there was a population problem, but were not always constrained by the same narrow religious views as Malthus himself. These 'neo-Malthusians' took a utilitarian approach. A diverse group, variously concerned about the number of people and the persistence of poverty—not to mention the possibility of revolt by a numerous and desperate peasantry—neo-Malthusians sought new solutions to the population problem, most notably the use of contraception (Micklewright, 1961). These differences in motivation, morals, and method are what distinguish neo-Malthusianism from its classical forebear.

The version of most interest here, however, is *environmental* Malthusianism. The term is often used interchangeably with neo-Malthusianism (*cf.* Greene, 1999; Robertson, 2012), but that would be too imprecise for my purposes. Environmental Malthusianism may be part of neo-Malthusianism inasmuch as it problematises population growth and accepts solutions without religious constraints, but it has its own distinct history—a more recent history—and a very particular form of problematisation which extends beyond human suffering and class distinctions, into the non-human natural world; beyond local economic resource management, into a global ecological ontology. Thus, for the purposes of this research there is no need to delve too deeply into the history of classical or neo-Malthusianism, other than as a means to trace the emergence of environmental Malthusianism.

The second object of analysis is *ecological modernisation*, a recent concept emerging in the early 1980s as a political response to the impasse between economic

growth and environmental sustainability (Mol and Jänicke, 2009). Despite fusing the two very large concepts of ecology and modernity, ecological modernisation is used in a fairly narrow and easily manageable sense in the literature. The label of ecological modernisation does not appear far outside of academia, but the idea itself is widely prevalent, saturating environmental politics and discourse (Hajer, 1995), and has replaced Malthusianism as the dominant discourse of environmental politics.

Given that this genealogy is centred on the transition from environmental Malthusianism, my analysis focusses on the events that led up to ecological modernisation, rather than the concept itself. But I must still be able to identify its presence in both the literature and the source material so I still need a working definition. By way of a shorthand, ecological modernisation can be viewed as having three fundamental characteristics which set it apart from earlier, more radical forms of environmentalism: firstly, a belief that the prevailing socio-economic and political structures of capitalism, markets, and economic growth cannot be overturned, therefore solutions must be sought within them; secondly, a belief that human ingenuity and market forces can provide clean processes that mitigate the worst of industrial pollution; and thirdly, a belief that material consumption can be decoupled from economic activity, enabling economic growth to incur minimal environmental consequences. In short, ecological modernisation means capitalism, technological optimism, and economic/material decoupling.

Lastly, the way in which I combine these objects produces a third object of analysis, which also functions as a framework for the whole project: the *explanation of change* from environmental Malthusianism to ecological modernisation. This is the starting point of my research as well as its boundary; it is the centre upon which the literature review is focussed and also the limit that constrains the genealogy and prevents it from growing endlessly outward. There is something of a leap of faith in even assuming that there was such a change. The literature is somewhat muddled as to what form this change could have taken, whether the change in question was a tide of popular rhetoric or scientific paradigm shift; a political-juridical enforcement or teleological progression. Existing historiographies provide examples of all of these forms combined, but most often the story is, unsurprisingly, told from a particular epistemic perspective—the discourse analyst focussing on political discourse (Hajer, 1995), or the development scholar focussing on intergovernmental agreements (Adams, 2009)—and as such, analyses which spill out across the disciplines can seem ill-defined and under-theorised.

Notably, a great many of the examples I use are written by scholars who do not describe themselves as historians, but still see the necessity of history as a means to understanding. Where those who do describe themselves as historians tackle similar objects, they have done so with other questions in mind, studying the rise of environmental Malthusianism but not its successor (Robertson, 2012), or the fall of Malthusianism more generally but not the environmental movement (Connelly, 2008). Suffice to say I remain unsatisfied by the explanations gleaned from the existing literature, as such I intend to create a robust conceptualisation of these objects in order to produce a robust explanation of change, and to do so requires a review of how others have tried to explain the change from environmental Malthusianism to ecological modernisation.

The literature review is essentially an epistemological animal. It asks of a given problem what we know, what we do not know, what we can know, what we should know. It identifies gaps, weaknesses, blind spots, and omissions in a given field. It simultaneously justifies and situates the research that follows. In many cases, there is no need to think too deeply about the literature review; if building upon an established line of enquiry using an established methodology for example, one need only evaluate the existing literature on the basis of its epistemological rigour—whether and to what extent this method with these data can really produce that knowledge. In this conventional sense, the literature review treats existing knowledge as a precursor to new knowledge, acting in series with the aim of adding new knowledge to old, to increase it. A genealogy, however, cannot follow this pattern. Instead, interactions with the literature must be iterative: returning new knowledge to the old, not to add to it but to recast it; producing new knowledge which subverts the old, in some cases subtracting from it; reworking texts first as literature then as data. This is because it is knowledge about knowledge; a history of thought. It is also a history of the present, and consequently even existing historiographies are also part of that history; simultaneously literature and data—a category into which my own writing inevitably fits.

For me, therefore, the literature review presents a particular problem. Since my data are texts, it is necessary to draw a strong distinction between text as data and text as literature. Some of the texts I use serve a dual purpose as both literature and data, therefore I must be meticulous when deciding where and how a text is used. In historiography, a distinction is commonly drawn between 'primary' sources produced during the historical period in question, and 'secondary' sources produced by other scholars who have

	Text as **analysis of object**	Text as **object of analysis**
Text viewed from inside the field	Literature review	Genealogy
Text viewed from outside the field	Genealogy	Genealogy
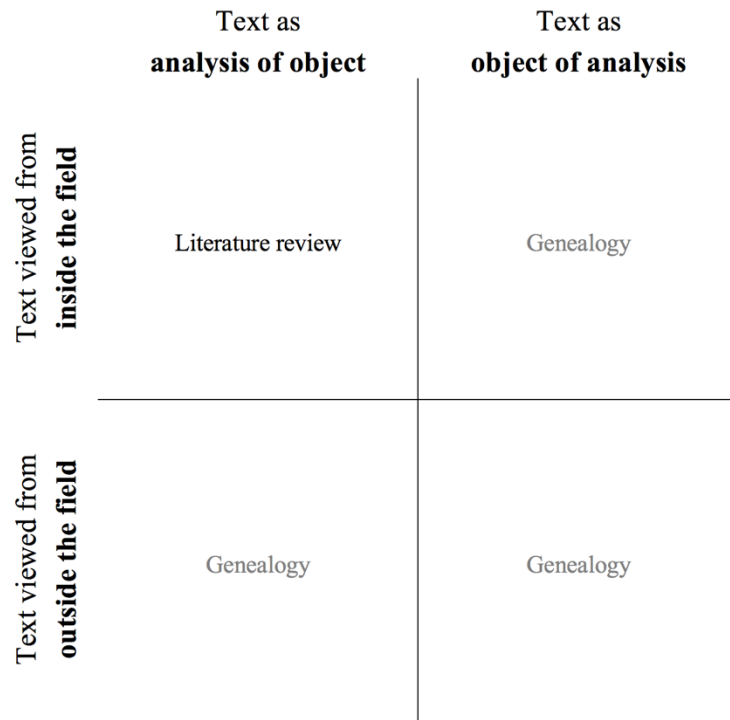
Fig. 1: Situating the literature review using two guiding distinctions

analysed that historical period or object. Researching a genealogy complicates this distinction. A secondary source written from within the discursive formation under analysis is as much a primary source as any contemporaneous text; not merely a passive observer of events, but an active producer of knowledge, an event in and of itself. Texts which fall into this category necessarily serve a dual function as both primary and secondary; they cannot be pigeonholed.

The solution is to analyse the text more than once, which forms my first guiding distinction: text as *analysis of object* and text as *object of analysis* (*Fig. 1*). The present literature review need only be concerned with text as *analysis of object*—or more precisely those texts which set out to analyse objects similar to mine. In this guise, the text can provide an instance of existing knowledge, rendering visible the gaps, weaknesses, blind spots and omissions, thus serving its epistemological function. But in order to do so the text must be viewed from a particular standpoint, from 'inside' the field of study, which necessitates the second guiding distinction: text viewed from *inside the field* and text viewed from *outside the field* (*Fig. 1*).

The essential difference between the narrow purpose of the literature review and the larger enterprise of genealogy hinges upon this positioning of the reader. The purpose of the literature review is to survey and critique existing research within one's own field of study, identifying that which is known and to what degree, situating and justifying one's own research in relation to it. Genealogy, on the other hand, makes an object of such knowledge, attempts to stand outside of it, to map the discursive formation that gives it coherence, and to identify the concrete manifestations of such formations as they shape social practices. In short, it attempts to reconstruct knowledge in its own context. Conversely, when a text is viewed from *inside the field*—for the purposes of the literature review—the context is that of the reader, in the present. The causes of rationality, content of beliefs, and claims to knowledge are objects of critique, rather than discovery. Judgement is applied, rather than reserved.

I wish to uphold a strong distinction between the literature review and genealogy, thus the narrow purpose of the present literature review is restricted to the view from *inside the field*—to participate in its discursive formation, to accept its forms of sense-making and ways of seeing, to adhere to the rules of argumentation that give it coherence; it is to critique a text on its own terms, according to the networks of knowledge within which it situates itself. In order to fulfil the function of situating and justifying the research that follows, the literature review must engage only with texts which analyse similar objects and engage with them from within the field of study. In cases where a text could be read as both *object* and *analysis*, from both *inside* and *outside*, then only one reading belongs to the literature review (*Fig. 1*); all other readings belong to the genealogy.

The field of study from within which the literature is to be viewed is history. Even scholars who do not consider themselves historians, but have nevertheless written about the history of these objects in some way, will be considered as being *inside the field* of study and thus, for the purposes of the literature review, engaged with as historiographers. Ideally, what I am looking for in each text is an explanation of change from environmental Malthusianism to ecological modernisation, but there are very few examples of authors looking explicitly at this change. In most cases, while focussing on the history of the objects of analysis, others have merely touched on—or glossed over—an explanation of change, so although my principal interest in each text is how it explains the change from environmental Malthusianism to ecological modernisation, this extends to the fall of

Malthusianism generally, or the rise of ecological modernisation independently, or indeed any other fragment of analysis that shines a light this central question.

In order to understand each author's view, it is necessary to remain open to the underlying assumptions, referents, and thought processes by which that particular view is made to make sense. In other words, step into the shoes of the author; see through their eyes—which is another aspect of the view from *inside the field*. At this early stage, critique will be limited to contradictions, fallacies, and errors which occur within a given author's own framework of reasoning. Ultimately this means taking conclusions on face value—if only temporarily—in order to produce a survey of existing knowledge, or more to the point: to understand how the literature sees itself. From this I can take a step back and find new ways of categorising and understanding existing knowledge, providing a framework within which to situate my own research, and rendering visible the gaps, weaknesses, blind spots, and omissions in the literature.

2.1   The four narratives of change

The explanations of change that occur in the literature take the form of four narratives, each telling a story of how environmentalist thought moved away from Malthusianism and toward ecological modernisation, and each privileging a particular view of the world, particular actors, or a particular causal chain. I have labelled the four narratives: the *advance of knowledge*, *political will*, *political impossibility*, and the *rise of feminism.* I have chosen these four headings myself and imposed them upon the literature as a way of making sense of it as a whole. As categories, they were not predefined and waiting to be discovered; they are imposed, by me, onto an otherwise heterogeneous medley of texts, and as with all categories they are imperfect and unstable. As such I do not wish to suggest that they are somehow fixed or universal—I merely suggest that this is a productive way of understanding the literature.

I have assumed no intentionality on the authors' part that they should work under these four headings. The individual authors have acted independently, in most cases from differing disciplines, and with differing purpose, and each of them toy with several possibilities in the course of their analyses. It is rare that any individual author should subscribe entirely to one of the four narratives, and it is possible that more than one story

can be told within the same work. In this sense, it is not possible to attach an author to a single narrative; the narratives are like tools to be picked up and put down as need be.

Indeed, a thorough analysis cannot help but recognise all four narratives operating in parallel. This is because all of them are true; they all represent a slice of reality. Any contention exists only where one narrative is thought to be the most important, the most significant, or the most instrumental. The real argument is over how we should think about historical process itself—as enlightenment and progress, as strategy and conquest, as cooperation and compromise, or as values and rights. Again, all of these processes exist in parallel, but to tell a historical narrative is to expound a certain perspective on history, which is why it is important to consider all of the narratives simultaneously, and reach for an overview that is not overly reductive.

In teasing out the narratives I have tried to maintain a distinction between the *observations* made by authors, and their *explanations* of events. The observation that an event occurred—that a particular person said a particular thing at a particular time and place—is not generally contentious. It is the explanations of those events—their significance, their causes and effects—that attract contention. Thus, where recounting each narrative, I do not generally question the veracity of observations, but where an explanation is offered, I give a critical reading in order to identify the limits of any proposed theoretical account.

My aim is not to position one narrative above the others as being the 'correct' one, but rather to draw all four narratives together as an overview of the literature as a whole, and as a touchstone against which to strike my own contribution. This is by no means a 'systematic' literature review. Before I began, I did not know how I would organise my findings. Only after reading everything I could gather that was connected to my broad enquiry was I able to ask any meaningful questions of the literature—or even categorise a text as 'literature' at all according to the guiding distinctions set out above. Only after that first circling could I swoop down to the most notable examples and begin characterising the state of knowledge as it stands.

2.1.1   Narrative 1: *the advance of knowledge*

The explanation of change by the *advance of knowledge* can be summarised as follows:

Significant elements of environmental Malthusianism—and neo-Malthusianism more broadly—were based on faulty knowledge regarding both the causes of population growth and the effects of high-density populations. As time went on scholars produced new knowledge which superseded the old, resulting in new and differing conceptualisations of both environmental impacts and population dynamics, including a more sophisticated appreciation of both the causes and effects of population growth. This resulted in a shift in emphasis away from the apocalyptic visions of an insatiable consuming population, toward a confident, techno-managerialist approach to clean production and pollution management; away from the controversial issue of population control, toward a push for women's access to healthcare, education, and political power.

A prime example of this narrative can be found in Adams (2009). Adams is not a historian as such, but as with a great many authors on the subject of sustainability he begins with a history of the idea and the practices that surround it. Adams is specifically interested in sustainable development, and thus focusses on the international arena, giving special consideration to the scientific knowledge that informs and influences the content of intergovernmental agreements. Of all the literature under review here, I would judge Adams' to be the most comprehensive and even-handed overview of the history of sustainability, taking into account a broad range of literature and weighing up the arguments for various forces in play—political, cultural, financial, or otherwise. In his synthesis, however, Adams opts for an explanation that privileges the *advance of knowledge* for the fall of environmental Malthusianism:

Over time, understanding about the links between population and development developed... Research has shown the inadequacy of earlier neo-Malthusian ideas. Thus it became appreciated that the benefits to a rural household of having more hands to work can outweigh the problem of having more mouths to feed – that there can be a strong economic logic in favour of large families; that fertility in most Third World countries is falling, and is related to wealth; and that people make strategic choices about numbers of children, especially where women have the power and education to control their own fertility... Analysts now have both a better understanding of the importance of political factors in food production and distribution, and a more sober appreciation of the prospects...

(*ibid.*, p. 136)

By no means does this development signal the end of environmental Malthusianism. As Adams points out, "one does not have to dig far in environmentalist writing or popular concern to find neo-Malthusian thinking alive and well" (*ibid.*, p. 137). It merely suggests that Malthusian thought was overtaken by alternative conceptualisations of the problem. Adams is also careful not to rule out the influence of other forces, suggesting that the vacuum left by a greatly diminished Malthusianism was filled by the somewhat less politically charged concept of 'global environmental change', and that whereas the Malthusian 'limits to growth' had been set in opposition to the conventions of capitalist economies, the newly conceptualised problem of global environmental change was "amenable to mitigation" (*ibid.*, p. 138). It is clear, however, from Adams' writing that he sees the *advance of knowledge* on this matter as the enabling condition for the political abandonment of environmental Malthusianism. Only by recasting the population problem as one of poverty and women's rights, and the environmental problem as one of technology and resource management, did it become possible for policymakers to progress beyond the previously intractable opposition of growth *versus* limits.

Notably, Adams' full account contains within it all four of the narratives set out here: the *advance of knowledge* occurs alongside the *political will* of economic doctrine and the 'anti-abortion lobby'; the *political impossibility* of reducing consumption in the Global North and population in the South; and the *rise of feminism* that assumes a woman's right to control her own body rather than being controlled by poverty, patriarchy, or the Malthusian State. The point, however, is not to assign one narrative to each author, but to demonstrate the existence of these fully formed, coherent explanations of change. Since they all describe the same reality during the same period of time, it is unsurprising that they should correspond and even interact. They merely do what all historiographical narratives do, which is to frame history in a certain way, or view it from a certain standpoint. Authors may focus on, or give precedence to, a particular narrative, but this cannot be taken as a dismissal of other narratives—the absence of an argument is not an argument against. My intention is not to confine each author to a specific narrative, but to illustrate each narrative using examples from specific authors.

This, however, does not prevent authors from pitching the *advance of knowledge* as the determinative factor in their own explanations of change. Just as Adams sets out his position at the end of his historiographical chapter, so too do other scholars who, while acknowledging or alluding to multiple intersecting narratives, ultimately favour the *advance of knowledge*. Andersen and Massa (2000, p. 337), for example, place the

advance of knowledge at the centre of their piece on the origins of ecological modernisation, whereby "the zero-sum game perception of environment versus economic growth was replaced by a perspective of the possible harmonization of industry with ecology".

In a rather less direct fashion, Worster (1990) expands his seminal work on the history of ecological thought, *Nature's Economy* (1977), with the observation that, since the 1970s, ecological science has seen "a radical shifting… away from its assumptions of order and predictability, a shifting toward what we might call a new ecology of chaos" (1990, p. 8)—the order of ecological balance imposing hard limits within which we are compelled to remain; the chaos of ecological disequilibrium implying no such rule. Worster wrestles with the question of whether the science of ecology was influenced by the politics of chaos or *vice versa*, but either way it was an *advance of knowledge*—the accepted knowledge of how the world works—that was, by Worster's account, determinative.

There are many of these examples, but for the purpose of clarity and concision I have selected only a small number of notable texts—prime examples—to exemplify the narratives and show how they are woven into the literature, rather than listing the contents of every available instance. The second of these prime examples, which fits within the *advance of knowledge* category—albeit less neatly than with Adams—can be found in Hajer (1995). Many of the authors who crossed the radar of this review have at some point referred to Hajer on the subject of ecological modernisation (*cf.* Adams, 2009; Andersen and Massa, 2000; Bernstein, 2001; Blühdorn, 2000; Buell, 2003; Christoff, 1996; Dryzek, 2005; Keulartz, 1998; Mol, 2001; Mol and Jänicke, 2009). As such, no account of ecological modernisation would be complete without at least a reference to Hajer's contribution. But that is not the main reason for his inclusion here; Hajer is here because he adds crucial detail to the narrative regarding the uses of knowledge in political discourse.

As with all of the authors whose analysis touches on both the rise of ecological modernisation and the fall of its predecessor, Hajer recounts how the radical environmental movement of the 1960s and 1970s was derailed by forces beyond its control, leaving a vacuum to be filled by an alternative environmentalist discourse. In this regard, Hajer offers an indirect treatment of the fall of environmental Malthusianism—as part of the radical environmental movement—but his main object of analysis is ecological modernisation in political discourse. My own reading of Hajer is an attempt to tease out

his account, not of the entirety of ecological modernisation in political discourse, but only those events precipitating its emergence as a new phase of environmentalist thought.

Hajer in fact begins his historiographical chapter by refuting the *advance of knowledge*—of one sort at least—as the driving force behind the emergence of ecological modernisation. He contests the "prevailing image of environmental politics", in which "the widespread political awareness of the troublesome state of the environment is the result of the recognition of the true extent of environmental degradation" (1995, p. 74). Hajer argues that environmental knowledge and environmental policy are in many cases, counterintuitively, unrelated, calling into question claims such as those of the Brundtland Commission (WCED, 1987), that political action should and does result from discoveries about the environmental impacts of human activity.

From this standpoint, Hajer argues instead that an 'institutional approach' would show environmental politics to be much more complex, dynamic, and non-linear than the Brundtland Commission would have it. Hajer's critique, therefore, concerns a specific form of knowledge—the extent of environmental degradation—and the role of that knowledge in the political process, rather than an out and out rejection of the *advance of knowledge* as a historical determinant. This point becomes clear where Hajer offers his own explanation of change, in which three of his four reasons can indeed be classed as *advance of knowledge*. The four reasons offered by Hajer (1995, pp. 94–95) can be summarised as:

1. "radical environmentalism was caught up by the economic recession of the late 1970s… The basic insecurity over the economic future of national societies frustrated the validity of the discourse of selective growth… In order to maintain its social credibility environmental discourse had to find ways to reconcile economic restructuring with environmental care"

2. "important changes occurred within the environmental movement itself… [the professionalization of the movement] eroded identity orientation and favoured a strategic model… The practice of mass demonstrations was recognized as a dead-end and NGOs started to think about alternatives"

3. "the emergence of other issues such as acid rain or the diminishing ozone layer, that were not necessarily as politically illuminating as nuclear power… The practice of strategic campaigning that had been pioneered by NGOs like Friends of the Earth and the Sierra Club, suggested the tactic of exploiting the importance of emblematic issues for the general public understanding of environmental problems"

4. "the political fact that an alternative discourse was available… Work in academic circles and expert organizations now provided an alternative conceptual language and delivered concrete solutions that suggested pragmatic ways of overcoming environmental problems… experiments had been conducted that hinted that energy savings of up to 40 per cent were feasible at reasonable costs"

The first of Hajer's reasons might be described as a form of *political impossibility*, the economic crisis triggering a 'batten down the hatches' approach to economic policy, but the rest can be read otherwise. The second, the professionalization of the environmental movement, indicates an *advance of knowledge* within the movement itself, and a recognition that old forms of activism were becoming ineffective. The third reason, the identification of new environmental issues and the development of new campaign strategies which, through experience and research, had been shown to be more effective, again suggests that an *advance of knowledge* within the environmental movement was determinative. The fourth and final reason for change, that academics and experts provided new concepts and concrete solutions to environmental problems, is most clearly an *advance of knowledge*, in terms of both the conceptual knowledge that made the environment into a governable object, and the technical knowledge made available to professionals and practitioners. This opened up opportunities for policymakers and analysts to reinstate an environmentalist polity whilst making a break from its radical past.

Hajer's account adds something of a twist to the *advance of knowledge* narrative: rather than discussing advancements which questioned the veracity of Malthusian science, he instead looks to advancements in political activism, which would enable the environmental movement to gain traction in an unsympathetic political climate. The detail of Hajer's story picks up where Adams' left off—after Malthusianism had become untenable; after the vacuum had been created—but Hajer's account is still suggestive of how the role of knowledge maintained some continuity between radical environmentalism and ecological modernisation. As Hajer notes:

… during the 1970s environmental politics had not only been made on the streets: a far less visible, but undoubtedly essential development of environmental discourse had taken place in the domain of policymaking institutions and think-tanks. This activity originated in the first phase of political upheaval over Limits to Growth. Since then policy-makers

and environmental experts had staged a host of conferences and produced a stream of reports in their effort to find effective ways of regulating environmental problems. Here they could take up much work that had been done before.

<div align="right">(ibid., p. 95)</div>

Contained within this observation is a rather more sophisticated feature of the *advance of knowledge*, with regard to how types of knowledge and the uses of knowledge differ between scientific and political discourse. The knowledge produced in *The limits to growth* (Meadows *et al.*, 1972), and the environmental science that underpinned the radical environmental movement, was bound by a singular form of scientific discourse in which the results of scientific research were not amenable to compromise. In contrast, political discourse allowed for multiple competing knowledges, capable of striking a balance between multiple competing interests. This manifested as a more flexible approach to the uses of knowledge, rendering it amenable to compromise. In short, radical environmentalists believed society would fall in line because science is truth; politicians knew this to be false.

And so, ecological modernisation emerged as the *de facto* environmentalist discourse for businesses, governments, and intergovernmental organisations. The transition was not a straight line from *a* to *b*, there were in fact three stages: the decline of environmental Malthusianism, the vacuum it left behind, and the emergence of ecological modernisation. It would be misleading to characterise the transition as an epistemic dispute contained entirely within the bounds of environmentalist thought. That is to say, ecological modernisation did not 'defeat' or 'subvert' environmental Malthusianism. The intellectual basis of Malthusianism had been under attack on many fronts, not simply over accusations of being empirically wrong, but more fundamentally in the sense that population growth was being re-conceptualised as an *effect* rather than a *cause*—an effect of poverty, ignorance, ill-health, and conflict, rather than their cause.

With a new conceptualisation of the problem came new solutions. Rather than the imposition of greater constraints on reproductive rights as Malthusians had earlier proposed, the emphasis was now on the removal of the constraints imposed by poverty and patriarchy. Despite the opportunity for common cause however, environmental Malthusianism did not immediately embrace this new way of thinking. Population ceased to be an environmental issue and ostensibly became a feminist issue—I say 'ostensibly' because the exercise of power over female subjects did not disappear with this intellectual

turn (see Greene, 1999; Halfon, 2007; Hartmann, 1995); nor did environmental Malthusianism cease to exist, it merely ceased to be the dominant discourse in environmental politics.

By the end of the 1970s many of the central ideas of the radical environmental movement had become fragmented and contested. The vacuum left by its collapse did not engulf all environmentalist thought; environmentalism did not suddenly stop. Rather, the effect was local and specific to politics in Europe and North America. What disappeared was not the movement itself but its status as an effective political force. The vacuum demanded a form of environmentalism that could effectively break from its radical forebear. The radical movement had not only been against population growth, it had also been against economic growth, and thus attracted the ire of businesses, liberal economists, and eventually governments. Within this context, it was alternative conceptualisations of environmental problems that flourished, along with alternative approaches to environmental activism that were conspicuously pro-capitalist, and alternative ways of embedding environmentalist knowledge into political discourse, all of which heralded the birth of ecological modernisation.

2.1.2 Narrative 2: *political will*

The explanation of change by *political will* can be summarised as follows:

The rise of the 'New Right' in European and North American politics brought with it an agenda that was in many ways at odds with environmental Malthusianism. An aversion to government interference in either personal or economic activity, both of which environmental Malthusians wished to meddle in; a renewed focus on economic growth, which population growth tends to increase; and the tapping of a rich seam of new voters in the form of the 'religious right', whose opposition to abortion was adopted as a central campaigning theme. The result was a form of politics that was disinclined to intervene in private lives, actively hostile toward environmental regulations, and unwilling to provide funding for family planning services—either at home or abroad. The hostility of the New Right ultimately resulted in the demise of environmental Malthusianism and a vacuum in environmental politics. Ecological modernisation was ready to fill that vacuum, both as an alternative environmentalist discourse, and as a form of environmental politics that was compatible with the economic liberalism of the New Right.

Without wishing to make too much of the point, *political will* is the most common among the reasons for change set out in the literature. This is not to suggest that prevalence or quantity in any way equate to importance or quality; only that that this particular narrative is popular amongst sustainability's historiographers. It might be tempting to assume— given that the *political will* is generally portrayed as emanating from the right of the political spectrum—that this is the expression of some form of political bias by environmentalists with an axe to grind. But that would be for another research; I provide no evidence and make no argument in that direction. Here I only wish to say that the *political will* narrative exists, and should be studied, regardless of how many people subscribe to it—which goes for all narratives and discourses; it is their existence that matters, and of what they consist, rather than how often they were printed. One consequence of the profusion of the *political will* narrative is that there is no shortage of examples (see, *inter alia*, Buell, 2003; Caradonna, 2014; Chappells and Trentmann, 2015; Coole, 2013; Dean, 2015; Dryzek, 2005; Greene, 1999; Grober, 2014; Hays, 1987; Robertson, 2012; Rumpala, 2011; Sabin, 2013), but for the purpose of clarity, I shall try to keep cases to a minimum, selecting only the most illustrative.

Robertson (2012) provides a book length historiography of environmental Malthusianism in North America, replete with copious primary sources and a mastery of the archives that is to be expected of a disciplinary historian. Robertson makes no mention of ecological modernisation; his object of analysis is environmental Malthusianism, the decline of which he discusses at some length, advancing the somewhat noncommittal argument that "from the 1940s to the early 1970s, an unusual alignment of historical forces—international and domestic, material and cultural—made Malthusianism very attractive, and then in the 1970s these forces mostly dissipated" (*ibid.*, p. 221).

In the midst of this alignment of historical forces, Robertson recounts how environmental Malthusianism's alarmist tone was muffled by its own success. The advent of falling birth rates, rising food production, strong environmental laws, and government funded birth control had blunted the edge of the Malthusian message. Combined with this were the public's changing attitudes—and growing antipathy—toward the encroachment of government and technical expertise into private life. Without the sense of urgency and importance it once enjoyed, environmental Malthusianism came under renewed attack from its detractors: African-Americans and women whom had been disproportionately affected by domestic Malthusian policies; anti-poverty campaigners who saw attacks on economic growth as an attack on the poor; social and economic conservatives who saw

environmental Malthusianism as anti-family and anti-capitalist, respectively. Alongside this array of determinative factors, Robertson provides copious detail of one final event—or the culmination of events—the rise of the New Right.

Given Robertson's North American focus, the rise of the New Right in this case is synonymous with the election of Ronald Reagan to the Presidency of the United States in 1980. Although the Right enjoyed political success across Europe and North America at that time, the story of its effects on environmental Malthusianism is invariably told through American politics, and how those politics rippled throughout the rest of the world via the targeting of development aid and the propagation of neo-liberal economic theory.

Robertson places the birth of the New Right in the early 1970s, when various conservative groups railed against the perceived excesses—moral and fiscal—of the preceding decade. Upon successfully gaining influence within the Republican party, these strongly conservative groups found in environmental Malthusianism the perfect foil; nationalist conservatives were opposed to development aid and internationalism, economic conservatives were opposed to government intervention and limits to growth, and social conservatives were opposed to abortion and sex education. From then on, environmental Malthusianism—and environmentalism more broadly—began to entrench along party political lines. "Before Earth Day" Robertson notes, "population limitation as a political issue had belonged as much to Republicans as to Democrats" (*ibid.*, p. 207), but by the end of the 1970s, the New Right had made environmental Malthusianism a target of ridicule, exasperation, and anger.

Throughout this process, Ronald Reagan had been steadily building his political career, and had carefully navigated the fraught terrain of Malthusian politics. Robertson paints a swift trajectory for Reagan, in what seems to be something of a Damascene conversion (*ibid.*, pp. 208–209). Initially, Reagan had supported environmentalist concerns. In 1969, as Governor of California, he had spoken about localised population pressures as a real problem that must be addressed, but by 1970, declared that 'the market' would solve California's population problem, believing it to be a natural, self-regulating system. Later that year, Reagan asserted that, if 'population control' meant access to family planning by free choice, he was in favour, but if it meant compulsory birth control, he was very much against.

By 1971, Reagan had developed a fully formed critique of environmental Malthusianism, which he delivered as part of an address to the American Petroleum Institute. In his critique, Reagan attacked the gloomy message of environmental

doomsayers. He labelled their pessimistic message as anti-technology, anti-industry, and anti-military—which he argued was there to defend the very freedoms required to speak and protest in the first place—and he accused them of downgrading and reviling the most prosperous society in the world. On population control, Reagan accused the doomsayers of being 'melodramatic', and pointed toward America's falling birth-rates and vast tracts of empty land—although he tactfully avoided the issue of resource scarcity, which had nothing to do with available space. Reagan's answer to the doomsayers was unrelenting optimism. Technology, markets, and freedom would furnish all human needs, and protect against environmental disaster. The United States would overcome all adversity. For Robertson, Reagan's political rhetoric and electoral success is a microcosm of the *political will* that drove Malthusianism into obscurity.

In Robertson's analysis, Reagan's optimism would become one of the three pillars of the New Right's electoral success, alongside the reassuring rhetoric of economic liberalism, and a large cohort of latent religious voters. Many on the religious right had eschewed the political process, perceiving it to be immoral and unrepresentative of their interests. Socially conservative politicians similarly felt that the interests of religious groups were not properly represented in national politics, and sought to position themselves as the voice of the religious right (*ibid.*, p. 214). By aligning with other restless factions within the Republican Party—economic liberals in particular—social conservatives were able to gain influence within the Party. This, combined with the sheer number of potential votes that could flow from a newly politicised religious right, made for a fruitful coalition.

At the same time, animosity between social conservatives and environmentalists had been brewing (*ibid.*, p. 215). Despite sharing similar views on some social issues—lamenting the greed of capitalism, the loss of community to individualism, and the growing materialism in society—the two groups ended at loggerheads over sex education, birth control, and abortion, overshadowing whatever values they may have held in common. On that basis, an alliance between social and economic conservatives was formed against environmentalism—and environmental Malthusianism in particular. The issue of sexual liberation, it seems, eclipsed any misgivings about greed, individualism, or materialism.

With social conservatives influencing the party and running a campaign based on a pro-family, anti-abortion platform, religious voters came out in force, helping push the

Republican Party on to electoral success[1]. As a result of this coalition of social conservatism and economic liberalism, in a move commonly cited as the death knell of environmental Malthusianism, Reagan enacted the Mexico City Policy in 1984, which blocked government funding for any organisation offering abortions or advice on abortion, at home or abroad—a gesture repeated by every Republican president ever since (Hawkes and Buse, 2017).

Robertson illustrates the role of economic liberalism, not through Reagan, but through the population economist and notable anti-Malthusian, Julian Simon, declaring that "no one represents what the rise of free-market libertarianism meant for population policy better" (2012, p. 215). Simon, like Reagan, underwent a Damascene conversion of his own, spending much of the late 1960s researching and consulting on population economics, even visiting India at the invitation of the Population Council (Sabin, 2013, p. 76). But Simon began to lose faith in the arguments for population control, citing research by the economists Simon Kuznets and Richard Easterlin among others, and by 1969 Julian Simon had fully converted to the anti-Malthusian cause. Far from exacerbating poverty and scarcity, thought Simon, population growth would provide a greater number of innovators and problem solvers, resulting in faster economic growth and a higher standard of living for all. Eventually, Simon reached the conclusion that, not only were the economic arguments for Malthusianism unsound, but from a moral perspective he had no right to work against the birth of so many who "might be a Mozart or a Michelangelo or an Einstein" (Simon, 1981, quoted in: Robertson, 2012, p. 216).

Simon's outspoken position set him against the figurehead of environmental Malthusianism, Paul Ehrlich, with whom he made a very public bet regarding the effects of population growth on commodity prices (Sabin, 2013). Ehrlich bet that, for a few key commodities—chromium, copper, nickel, tin, and tungsten—prices would rise because of their growing scarcity; Simon bet that prices would fall because scarcity spurs innovation. Simon won. (See Worstall, 2013, for a more nuanced account of Simon's apparent victory).

Of course, the sheer force of economic liberalism in the late 1970s and early 1980s did not rest on the ideas of one person. Its effects have been profound and far reaching, far beyond the narrow scope of environmental Malthusianism. But even the thin sliver that overlaps environmentalist thought bears greater scrutiny, which can be found in an

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[1] This claim is, in fact, not necessarily empirically true (*cf.* Johnson and Tamney, 1982), but is still a consistent and recurring feature of the *political will* narrative, and thus important to mention.

insightful analysis by Dryzek (2005). Dryzek identifies several discourses commonly used in debates around environmental politics, three of which are pertinent to the present study. Dryzek labels the three discourses as 'survivalism', 'Prometheanism', and 'ecological modernisation'.

'Survivalism' relates to the need for human societies to exist within the ecological limits of the Earth in order to survive. It maintains that "human demands on the carrying capacity of ecosystems threaten to explode out of control, and draconian action needs to be taken in order to curb these demands" (*ibid.*, p. 38)—it clearly incorporates environmental Malthusianism. 'Prometheanism' relates to the economic liberalism and technological optimism espoused by the New Right. It is a reference to Prometheus of Greek mythology, who stole fire from the Gods and returned it to humanity, thus providing us with the exceptional ability to transform our environment and put it to use. Adherents to the Promethean discourse have "unlimited confidence in the ability of humans and their technologies to overcome any problems—including environmental problems" (*ibid.*, p. 51). Somewhat less poetic, yet no less important, 'ecological modernisation' is presented by Dryzek not simply as a theory of modernity or the practical measures of political modernisers, but as a political discourse in and of itself—fully formed and coherent, incorporating economic, environmental, and political considerations into a self-referential set of problematisations and solutions. As summarised by Dryzek, ecological modernisation holds that "the capitalist political economy needs conscious reconfiguring and far-sighted action so that economic development and environmental protection can proceed hand-in-hand" (*ibid.*, p. 169).

As with Hajer, Dryzek discounts a simple transition from environmental Malthusianism—or survivalism—to ecological modernisation, instead highlighting the three-stage process whereby, in Dryzek's terms, the survivalist discourse was beaten back by the Promethean discourse, creating a space within which the new ecological modernisation discourse could flourish. For Dryzek, Prometheanism is synonymous with the rise of the New Right and, of course, Promethean in chief, Julian Simon. Dryzek, like Robertson, makes plain that "the influence of Promethean discourse in US policy in the 1980s can be discerned quite clearly in the person of Julian Simon" (*ibid.*, p. 64). But what Dryzek's discursive analysis teases out of the opposition between survivalism and Prometheanism is not merely a political contest between economic statism and economic liberalism, but a profound ontological difference in how they each conceptualise the nature of nature, and humanity's relation to it.

In the ontology of survivalists, the natural world is replete with resources which are diverse but finite. The materials that form these resources come primed with intrinsic usefulness, waiting to be harnessed by humans—to provide us with goods and services, or absorb and recycle our waste. Since these resources are provided to us by the ecosystem or the Earth, we are limited in how quickly or liberally we can make use of them. The concept of living within these limits is predicated upon the belief that the resources exist 'out there' waiting to be exploited.

In the Promethean ontology, natural resources do not exist. That is to say, what exists 'out there' is merely brute matter, material that does not become a 'resource' until after humans have devised some way of putting it to use. As a consequence of this anthropogenic ontology, running out of one type of matter does not spell the end of the resource; human ingenuity will simply find another way to provide equivalent utility using another method. The same would be true of all resources—goods, services, absorption, and recycling—perceived to be provided by the environment.

Dryzek is at pains to point out that the Promethean ontology is not, strictly speaking, 'cornucopian'—there is not an infinite supply of brute matter to be transformed into resources—but for practical purposes, since Promethean ingenuity is potentially boundless, it will always result in the creation of sufficient resources to furnish human needs. For Prometheans, the amount of ingenuity in the world correlates with the number of people alive, therefore population control is not only unnecessary for solving environmental problems, but is in fact counter-productive.

The explanation that Dryzek offers for the success of Prometheanism—and therefore the fall of Malthusianism—is the *political will* of the nascent Reagan government (*ibid.*, pp. 61–63). Prometheans spoke a language that appealed to the New Right; indeed, they were cut from the same philosophical cloth, placing humans, trade, and growth above any intrinsic value that might reside in nature or the environment. The Promethean discourse dominated environmental politics in the 1980s and was set in direct opposition to the survivalist discourse. The ecological modernisation discourse that followed did not supplant survivalism, rather it emerged separately, as a pragmatic response to a politics in which the doctrine of economic growth could not be seriously challenged. Ecological modernisation was not part of the anti-environmentalist Prometheanism, rather it was a new incarnation of environmentalism, fit for a world wrought by the Prometheans.

This is where the American-centrism of the *political will* narrative becomes most apparent. Authoritative accounts of ecological modernisation place its emergence in Germany around 1982, with its intellectual roots spreading throughout the 1970s (Hajer, 1995; Mol and Jänicke, 2009). Ecological modernisation in North America, however, does not surface until the early 1990s (Buell, 2003; Hayden, 2014). This brings two points to light. Firstly, given that Reagan was inaugurated in 1981, it is unlikely that his presidency was a causal factor in the genesis of ecological modernisation. Either the political winds that gave rise to the New Right were simultaneously blowing across the Atlantic, or anti-Malthusian sentiment in Europe and America developed independently; either they shared a common ancestor, or they were unrelated.

Secondly, it would suggest that political environmentalism in America did not find its feet until a decade later, before effectively importing ecological modernisation from Europe. On this timeline, it would appear that Europe led the way in both anti-Malthusianism and ecological modernisation, calling into question the sequence of events assumed by the *political will* narrative. This is not to say that *political will* played no part in preparing the way for ecological modernisation—the Promethean discourse existed in Europe as well as America. Nor is it to say the rise of the New Right in America had no effect on the rest of the world—its ripples were surely felt, then as now. It is only to say that the development of environmentalist thought, from Malthusianism to ecological modernisation, was at the very least an iterative and reciprocal trans-Atlantic affair, as opposed to being linear and American-centric.

The advance of economic liberalism in the late 1970s and early 1980s cannot be dissociated from the advance of neo-liberalism during the same period. Reagan's government is widely regarded as one of the pioneering instances of neo-liberal praxis—after Augusto Pinochet in Chile, 1973, and Margaret Thatcher in the United Kingdom, 1979 (Mirowski and Plehwe, 2009). In its policy statement to the International Conference on Population in Mexico City, 1984, the Reagan government charged environmental Malthusianism with "anti-intellectualism", declaring that, while there was a "commendable and long overdue concern for the environment", it was merely "a reflection of anxiety about unsettled times and an uncertain future", with a "disregard of human experience and scientific sophistication" (White House Office of Policy Development, 1984, p. 577). The Reagan government considered population growth to be a "neutral phenomenon", which "is not necessarily good or ill", but rather, "becomes an asset or a problem only in conjunction with other factors, such as economic policy,

social constraints, need for manpower, and so forth" (*ibid.*, p. 576). For the Reagan government, the real enemy of development was not population, but governmental control of economies and constrained economic growth.

Dean (2015) links the rhetoric of the Reagan government—and in particular the charge of anti-intellectualism—to Frederik Hayek's lament for the 'pretence of knowledge'. Hayek, a leading light of neo-liberalism, had received the Nobel Prize for Economics in 1974, and as part of his acceptance speech, had pilloried the 'limits to growth' experiment as pseudo-science. Hayek remarked that "the enormous publicity recently given by the media to a report pronouncing in the name of science on *The Limits to Growth*, and the silence of the same media about the devastating criticism this report has received from the competent experts, must make one feel somewhat apprehensive about the use to which the prestige of science can be put" (1978, p. 31). Dean argues, however, that despite the apparent alignment of neo-liberalism and anti-Malthusianism displayed by the Reagan government, it would be a mistake to assume that Malthusianism was entirely severed from neo-liberal forms of governing. "In the years after the United States' intervention at Mexico City", writes Dean, "we witness a number of surfaces of emergence that bear the mark of Malthus's principle of population" (2015, p. 33). In the spheres of sustainable development, welfare reform, and immigration policy, neo-liberal governance has never fully abandoned the pursuit of a Malthusian "genopolitics" (*ibid.*, p. 35).

The story of *political will* is a very American drama, and despite its popularity in the literature, it must be deployed with caution. Even if the *political will* of the New Right could be credited with the demise of environmental Malthusianism, the direction of travel for ecological modernisation clearly began in Europe—spreading via the OECD and the United Nations (Hajer, 1995)—before finally making its way to America some ten years later (see also, Dryzek, 2005, p. 163). The actions of the New Right when in government certainly had a colossal effect on Malthusian practices throughout the world, particularly through the removal of international aid for programs offering abortions or advice on abortion. But the history of these concrete actions must not be conflated with the history of thought that preceded them. The rationale used to support, defend, and legitimate those actions—the discursive practice that made the plans utterable—developed some time before, and was not confined solely to the American continent.

As detailed by Greene (1999), the 'population apparatus' that devised, promoted, and enacted Malthusian policies throughout the world, was not actually contained within

the American government. Rather, it was composed of expertise, technologies, and discourse—teamed with state and non-state institutions—directed toward the problematisation of population and its problematic subjects. When the Reagan government distanced itself from the population apparatus, the apparatus did not disappear; it merely regrouped and adjusted to its new reality, eventually re-establishing itself within the new development paradigm of women's empowerment (see also, Halfon, 1997).

As for the role of the Religious Right and the anti-abortion lobby, it was widely believed in the run up to Reagan's election that religious voters would turn out in their droves to support the Republican Party. The Party had many outspoken social conservatives in the running, religious leaders made numerous high profile appearances on television and in other media, and Reagan himself had agreed to meet face to face with those religious leaders to hear their concerns, but despite this belief—then and now—there is some doubt as to whether the fanfare translated into actual votes (Johnson and Tamney, 1982; Marley, 2006), and little evidence of Reagan acting on behalf of religious groups beyond the defunding of abortion. The 'event' in that instance was situated at the news-stand, not the ballot box.

This point also extends to the position of environmentalism and environmental politics throughout the Reagan presidency. As argued by Sale (1993, ch. 4), environmentalism did not wither away during that time. Membership of environmental campaign groups soared, and despite the best efforts of the Reagan government, previous successes in environmental regulations and protections largely remained in place.

Beyond the scope of environmental Malthusianism, the Reagan government is perhaps most [in]famous for the advancement of economic liberalism. As noted, the sliver that overlaps the *political will* narrative is personified in Julian Simon. What is interesting about Simon's role is that, despite being credited with providing research and arguments against environmental Malthusianism that might be construed as the *advance of knowledge*, he is invariably presented in the narrative as an ally and activist of the New Right, and thus an agent of *political will*. When taken in abstraction, Simon's writings and media appearances are very much an epistemic crusade to upturn what he saw as the faulty knowledge of Malthusianism, but as a figure in the story of *political will*—even as told by one of his own biographers (Sabin, 2013)—Simon is swept along on a wave of political change, in which the knowledge he produced was merely a component of a broader political struggle.

2.1.3   Narrative 3: *political impossibility*

The explanation of change by *political impossibility* can be summarised as follows:

> *Intergovernmental organisations attempted to find broad agreement on the processes and practices that would result in a sustainable global economy. Good intentions for strong and decisive action on environmental issues were steadily worn down by national interests, business interests, and ideological differences. Industrialised countries argued that developing countries should control their population growth; developing countries argued that industrialised countries should reduce their consumption. Industrialised countries argued that development should be limited by environmental constraints; developing countries argued that the costs of environmental damage should be borne by those who have benefited historically from its causes. As a result of the impasse, the only negotiation texts that could be agreed upon were light on both population control and consumption reduction, which took a backseat to the interests of economic growth and development.*

Political impossibility is a story about the United Nations. It can be read as a micro-genealogy of 'sustainable development'—not to be confused with sustainability as a whole—beginning in the 1960s with the presumed conflict between the interests of 'environment' and 'development', and ending in the 1980s with their reconciliation in sustainable development. I earlier pointed out that the *political will* of the New Right was the most popular explanation of change among sustainability's historiographers, a claim that might seem wayward given that this narrative—*political impossibility*—covers the much-vaunted concept of sustainable development. However, even though sustainable development has gone on to have such great bearing on environmental politics and thought, the story of its emergence is not often told as a change from environmental Malthusianism to ecological modernisation. Rather, those two elements are ancillary to a story which is otherwise about the conflict between environment and development. In retelling the *political impossibility* narrative, therefore, I shall lay out the basic sequence of events that mark the conflict between environment and development, but pay particular attention to the elements around the edges that relate directly to environmental Malthusianism and ecological modernisation.

The *political impossibility* narrative, while almost ubiquitous in the sustainability literature, appears somewhat fragmented due to the selective way in which authors emphasise certain aspects and gloss over others. For this reason, I have relied upon an amalgamation of different authors to tell the narrative in sequence, rather than relying on single authors as exemplars. Many of the features of the narrative appear throughout the literature, particularly in those texts which cover the full period of time, so my selection of each author for each element is done on the basis of their attention to details that others have omitted. There is a great deal more detail to this story, and a great many books that pore over them—perhaps because the annals of the United Nations are so well documented and readily accessible—but the purpose here is not to give all of that detail, rather it is to present the broad narrative and its key events.

The one thing on which all of the authors agree is that the United Nations Conference on the Human Environment (UNCHE) in Stockholm, 1972, is the central event that signalled the emergence of what would later become sustainable development, but the story does not begin there. Rather, it begins in the years leading up to the 1960s and the United Nations' 'first development decade', when the concerns of environment and development were still conceptually separate.

Adams (2009) recounts the history of development before its entanglement with environment, from its appearance in the English language in the 18th century in reference to biological growth or advancement, through its use in the 19th century as theory of 'progress' bound up in capitalism, Western culture, and colonial imperialism. But the focus of Adams' analysis, as with most authors, is the "remarkable standardization of meanings" which occurred after the Second World War (*ibid.*, p. 8). The event that marks this standardisation of meaning is the inaugural address of United States President Harry Truman in 1949. At a stroke, Truman marked out great swathes of the globe as 'underdeveloped', set out a development path that led to industrialisation, democracy and capitalism, identifying science and technology as the means by which it would be achieved. In short, the world was to be made in America's image, and the word 'development' came to mean the projects directed toward this end.

During the 1950s, an orthodoxy emerged in development expertise, and the techniques deployed in the reconstruction of Europe after the Second World War were applied to underdeveloped regions, the expectation being that they would produce similar results to those achieved in Europe. Development quickly became synonymous with economic growth, and the development path was laid out along the 'five stages of

growth'—described by development economist Walt Whitman Rostow as "traditional society, preconditions for take-off, take-off, maturity, and the age of high mass consumption" (Rostow, 1960, quoted in: Adams, *ibid.*, p. 9). By the time of the United Nations First Development Decade in 1960, however, cracks had already begun to show, with social and economic conditions in many developing countries steadily worsening (*ibid.*, p. 10). But the idea of development had become fused with the ideal of modernity, and so despite its problems the development process continued unabated toward the then-unproblematic *telos* of 'high mass consumption' for all.

Development had not yet become entangled with the environment, but it was certainly a target of neo-Malthusian thought. Greene (1999, ch. 2) makes the point by singling out a speech given by Liebmann Hersch, president of the International Union for the Scientific Study of Population, at the United Nations' earliest World Population Conference in Rome, 1954. Hersch begins the problematisation of population growth and development by pointing to rapid increases in population in the 'economically under-developed countries', which he sharply contrasts with 'Western civilisation'. He then goes on to invoke the 'demographic transition', meaning that with development comes medicine and sanitation, which increase the birth rate and decrease the death rate, creating a boom in population, before the security of economic growth encourages a natural drop in the birth rate—though not before a substantial increase in the overall population. At that point in time, before the emergence of environmental Malthusianism, the size of the global population had not been widely problematised in terms of environmental limits, rather it was social and economic factors that formed the basis of the population problem, just as it had been with the Malthusianism of old.

It was on this basis that Hersch highlighted the threat to the demographic transition from the 'demographic stumbling block', meaning that with rapid development comes too rapid an increase in births and decrease in deaths, economic growth cannot keep pace with the rising population, resulting in a much larger number of people, but without the concomitant drop in the birth rate associated with the security of economic growth. Hersch then caps his problematisation with the age-old Malthusian scare: large numbers of impoverished people, envious of the living standards of the West, impelled to migrate to more fortunate lands. "The problem of population", Hersch warned, "has today grown to be a world-wide, international and social problem threatening world peace and civilization" (Hersch, 1954, quoted in: Greene, *ibid.*, p. 69). For the Malthusians of the

1950s, population growth was a threat to development, a threat to peace, and a threat to civilisation, but not yet widely thought of as a threat to the environment.

Returning to Adams (2009, ch. 2), environmental science and environmentalist thought were beginning to take root in the same globalist, intergovernmental arena as development and demography. In 1955, a symposium titled Man's Role in Changing the Face of the Earth brought together experts in the environmental sciences to discuss the impacts of human activities on what was by then understood as an interconnected global ecosystem. The meeting reflected the shape of environmentalist thought at that time: global, ecological, scientific. As Adams points out, this globalised environmentalism was not strictly new (*ibid.*, p. 50). Scholars such as Fairfield Osborne Jr. (1948) and William Vogt (1948), whom had published books on the global environmental consequences of human activities, had also made the connection between human population growth and planetary limits—the emergence of a specifically *environmental* Malthusianism—but these concepts and their connections remained in the wings of international fora throughout the 1950s, being noted and discussed, but not yet taking centre stage.

By the 1960s, however, environmental Malthusianism had fully emerged, and the three global problematics of underdevelopment, population growth, and environmental degradation had begun to interact and conflict. Development was already thought to have created a population problem in the form of the demographic stumbling block, but now population growth was also seen as a threat to the environment, and as environmentalist discourse turned against industrialisation and economic growth, it became a threat to development as well. There are countless examples of these conflicts playing out amongst commentators and public intellectuals, but the *political impossibility* narrative centres on the international scientific and intergovernmental communities, and the forum in which it took place was, for the most part, the United Nations.

On this note, Adams points specifically to the reaction of the United Nations Educational, Scientific and Cultural Organization (UNESCO), for whom "it had been increasingly clear… that they could not influence decisions about the use of natural resources in the developing world unless they were prepared at least to talk in the new language of development" (2009, p. 54). Elsewhere there was a 'catastrophist' streak in environmentalist discourse regarding pollution and population growth which, for Adams, was "matched by a parallel and closely related debate about economic growth" (*ibid.*, p. 51), but there was still some distance between the popular catastrophism of environmental Malthusianism and the slow deliberations of the United Nations.

The modern environmental movement was already underway throughout the 1960s, but the environment only enters into the realm of *political impossibility* in 1968, the year that the United Nations Conference on the Human Environment—the 'Stockholm Conference'—was first proposed. Bernstein (2001, ch. 2) provides a detailed account of the Stockholm Conference, from its inception as a purely environmental concern, through to the recognition that it must attempt to reconcile the competing concerns of both environment and development. Bernstein's analysis is exceptional in terms of sheer detail. By offering a close reading of the texts of political deliberations, Bernstein has produced an account richer than most—in many cases specifying which delegation affected which change, rather than relying solely on broad descriptions of how 'developing countries' said this while 'developed countries' said that.

On this point, Bernstein notes: "Despite the impression of unanimity among developing countries in United Nations resolutions, not all developing countries found common cause on every issue... However, on the core environmental and economic positions, the developing world acted largely as a bloc in an attempt to maximize its political power" (*ibid.*, p. 36). This would perhaps explain why most accounts—including my own—ordinarily speak of 'developing countries' as a single bloc, but it should always be read as an uneasy and unstable alliance. Bernstein's attention to detail on this and other points also aids in identifying the roles of environmental Malthusianism and ecological modernisation as they jostle with other themes and priorities within the *political impossibility* narrative.

The proposal of the Stockholm Conference was a direct result of public anxiety in industrialised countries over the state of the global environment. The modern environmental movement enjoyed a high profile across the Global North throughout the 1960s, and political representatives were inclined to take those anxieties seriously. The public spectacle of this process is captured perfectly in a little-known fact about the genesis of the Stockholm Conference: that it was sparked by Swedish soil scientist and television personality, Svante Odén. As well as being a household name, Odén was an advisor to the Swedish government, and was instrumental in convincing both politicians and the public that the lakes and rivers of Sweden were being acidified as a result of the pollution billowing from smokestacks in other countries. Persuaded of the need for international co-operation on the effects of pollution, the Swedish government proposed the Stockholm conference (*ibid.*, pp. 32–33).

At this stage, there was little thought given to the interaction between the competing concerns of environment and development. Certainly, some vocal environmentalists had suggested that all economic growth—developing or developed—should be halted, and all population growth should be reversed. Some had even gone as far as to suggest a global system of 'triage', whereby the 'fittest' would impound the world's resources, "letting the least fit die in order to save more robust victims of hunger" (Paddock and Paddock, 1967, quoted in: Biswas and Biswas, 1984, p. 36). In the sober forum of the United Nations however, such extremism was largely absent, but the advance of the environmentalist agenda and associated discourse on economic growth, population growth, and control over resources, was widely interpreted as the tide turning against development.

At that time, in 1968, the concerns of development were framed less as a fear of Malthusianism, and more in conventionally economic terms. "In particular," Bernstein writes, "developing countries worried that trade barriers would be erected under the guise of environmental protection." (2001, p. 34). Within the development paradigm, natural resource use, free trade, and economic growth were assumed to level the playing field between developed and developing countries; the environmentalism that spurred the Stockholm Conference had the potential to undermine the entire system, thus perpetuating global inequalities. Whilst Malthusian rhetoric was a concern, the real fear was the raising of trade barriers to the developed world, the instigation of protectionism in the west, and the loss of sovereignty over natural resources.

The only forum in which the representatives of developing countries could effectively press the issue was the United Nations. To that effect, Bernstein highlights a key resolution proposed at the General Assembly in 1969 which "for the first time placed the concerns of developing countries within the main purpose of the conference", and another at the Economic and Social Council in 1970 which "went further in an attempt to balance environmental problems of developed and developing countries" (*ibid.*, p. 34). However, as Bernstein puts it, the General Assembly "simply took note", and a split between the Global North and South—between environment and development—became apparent (*ibid.*, p. 35).

By 1971 the conflict was out in the open, and it was no longer possible to discuss the environment in isolation from development. "General Assembly resolutions for the first time directly linked the two concepts" notes Bernstein, quoting one such resolution which stated that "development plans should be compatible with a sound ecology and that

adequate environmental conditions can best be ensured by the promotion of development" (*ibid.*, p. 35). Bernstein's next observation demonstrates why this story takes place in the United Nations, as opposed to the marketplace, the media, or in bilateral negotiations: "In response, the United States and Great Britain voted against the resolution and all other developed countries, East and West, abstained. However, it still easily reached the necessary two-thirds majority for passage" (*ibid.*, p. 35). Only the sheer number of developing countries at the United Nations kept the first development decade from becoming the last.

Under such pressure the proposed Stockholm Conference began to shift in emphasis. A key event in this process was a meeting held in Founex, Switzerland, in 1971, which brought together a panel of experts in an attempt to resolve the conflict between environment and development (*ibid.*, p. 35). The resulting Founex Report signalled a very deliberate shift in discourse. Faced with the *political impossibility* of giving supremacy to either environment or development, the Founex meeting had sought to create new ways in which the two could complement one another. The report did not propose any concrete solutions, but it did demonstrate how the entire debate could be reframed: that there must be ways in which environmental protections can benefit development, and ways in which the development process can benefit the environment. "The change from 1968 to 1972 in United Nations Economic and Social Council (ECOSOC) and General Assembly (UNGA) resolutions", writes Bernstein, "demonstrated the progressive movement of developing world concerns to the mainstream, if not the center, of Stockholm's agenda" (*ibid.*, p. 34).

By the time the Stockholm Conference actually took place in 1972, the entire debate had shifted from one of protecting the environment from development, to one of reconciling environment with development. Not only had the subject of the conference changed but also its aim: from producing a "largely educational and inspirational document of general principles" to one which "represented concrete action" (*ibid.*, p. 43). The shift did not universally take hold; Bernstein points to an early Canadian draft of the Declaration on the Human Environment—the agreement that the Stockholm Conference was convened to produce—which contained little on the relationship between environment and development. But "by the end of the conference", Bernstein assures, "the environment/development compromise played a central role" (*ibid.*, p. 43).

More specifically, Bernstein directs our attention to the Chinese delegation, who "played a major role in reopening the Declaration to amendments and discussion" (*ibid.*,

p. 43). China had been left out of the earlier intergovernmental working group, and may have felt the need to assert some level of influence over later proceedings, but in the end, they played a crucial role in reintroducing some of the development issues that had been raised previously in the Founex Report. The Chinese delegation produced a ten-point statement, leaked to the press, which for Bernstein "epitomized the uneasy meshing of concepts" constituting international environmentalism at that time (*ibid.*, p. 43)—chiefly that development is a necessary precondition to enable environmental protection, and that a distinction must be drawn between countries which pollute in the process of development, and countries which are already highly developed. The Chinese proposals met with some resistance, particularly from the United States, who saw that any historical environmental responsibility might incur a competitive disadvantage. Discussions often broke down into adversarial North/South rhetoric, and traditionally divisive issues such as colonialism continually threatened the accord, but in the end, many of the developing countries' proposals were incorporated into the draft declaration.

In amongst deliberations was the notably muted presence of environmental Malthusianism. Despite being the central tenet of environmentalist discourse elsewhere, and despite the profusion throughout popular culture that marks its place in other historiographical accounts, the representation of environmental Malthusianism at the Stockholm Conference was modest. The catastrophist rhetoric of some Malthusians had elicited discomfort in developing countries in the lead up to Stockholm, but from the beginning, the wording of the declaration itself had remained non-specific and non-committal, stating only that "excessive population growth can defeat man's efforts to preserve the Earth's environment" (*ibid.*, p. 44).

Given that population growth was greatest in developing countries, this still posed a threat to the negotiations. Again, it was the Chinese delegation who pushed for a change in emphasis, adding that people are the 'most precious' thing in the world, and are the source of all progress and wealth. Bernstein reiterates the muted role of environmental Malthusianism at the Stockholm Conference, describing the final declaration principal on population as "a weak statement", in which "governments, based on their own priorities and without prejudice to human rights, should apply demographic policies (either to decrease or increase populations) as it suits environment and development goals" (*ibid.*, p. 46). The Stockholm Conference, one of the most significant events in the history of environmental politics, which took place at the very crest of the environmental

Malthusian wave, saw the issue of population pushed to the periphery by the blunt force of *political impossibility*.

The political impact of the Stockholm Conference was momentous. Whilst it did not solve the conflicts between environment and development, it did cement the view that complimentary solutions to both problems can and must be sought. And whilst the resolutions that came out of the conference mainly addressed environmental concerns—not surprising given that it was an environmental conference—it kept alive the long-standing commitment of the United Nations to the development process, and by extension, a commitment to the principle of economic growth. But the lines along which the Stockholm Conference had been divided—North and South; environment and development—continued beyond the conference itself, discernible in two key events: the agreement of the Cocoyoc Declaration in the Global South; and the creation of the 'Polluter-Pays Principle' by the Organisation for Economic Co-operation and Development (OECD) in the Global North. These events took place more or less concurrently, but in order to make sense of them it is necessary to recount them separately, beginning with Bernstein's account of the Cocoyoc declaration in the Global South.

One notable outcome of the Stockholm Conference was the establishment of the United Nations Environment Programme (UNEP), headed by the secretary-general of the Stockholm Conference, Maurice Strong. Under Strong's leadership, UNEP set about the process of integrating environment and development using the concepts of 'eco-growth' and 'ecodevelopment'. In his capacity as executive director of UNEP, Strong had attended The Symposium on Patterns of Resource Use, Environment, and Development Strategies in Cocoyoc, Mexico, 1974. Cocoyoc had been billed as 'Founex II' (*ibid.*, p. 54), and was convened with the intention of addressing the outcomes of Stockholm from the perspective of the Global South. The resulting Cocoyoc declaration argued bluntly that "the maldistribution of resources and overconsumption by the wealthy lies behind humanity's inability to meet the 'inner limits' of satisfying fundamental human needs and the 'outer limits' of the planet's resources", and that the solutions "cannot be left to the automatic operation of market mechanisms" (*ibid.*, p. 55).

The Cocoyoc declaration was not arguing against economic growth, on the contrary, it merely argued that growth should be targeted and controlled, in order to tackle global inequalities. The Cocoyoc declaration did, however, push against the liberal economic orthodoxy of free trade and market mechanisms, and when Maurice Strong went on to champion the concept of ecodevelopment at UNEP, he attempted to infuse the

sentiment of the Cocoyoc declaration with language that might reassure the Global North. He argued that "'Eco-growth' does not mean 'no-growth'; indeed, it means better growth, sounder growth, and perhaps even more growth in qualitative terms" (Strong, 1975, quoted in: Bernstein, *ibid.*, p. 56–57). Still a commitment to growth, but also an attempt to re-conceptualise it beyond liberal economic orthodoxy.

In the Global North, between 1972 and 1974, the OECD was working on the design of a new economic instrument that would internalise the costs of environmental degradation, thereby addressing the challenges of Stockholm without undermining the liberal economic orthodoxy of free trade and market mechanisms—in sharp contrast to the complete overhaul of the international economic order proposed at Cocoyoc (*ibid.*, p. 50). It was called the 'Polluter-Pays Principle', and was designed on the basis that the costs of pollution abatement, in whatever form it should take, must not be subsidised by governments, which would distort trade, but should instead be borne by the producer— and ultimately the consumer—thus enabling the market to reflect the true environmental costs of human activities. The Polluter-Pays Principle, as Bernstein has it, "marked the start of a trend to incorporate environmental costs into production, markets, and accounting practices, rather than favor what economists label command-and-control regulation" (*ibid.*, p. 51). In practice, the Polluter-Pays Principle generally took the form of regulations, standards, and tradable permits, but the basic intention—to have environmental costs reflected in market prices—remained as its basis, which was consistent with the nascent neo-liberal view that society is best governed through well-designed markets rather than by diktat.

The Polluter-Pays Principle marked a turning point in environmentalist thought, clearing the way for an alternative to the catastrophist, anti-growth, and anti-capitalist discourse that dominated environmentalism at the time. Sachs (2010, p. 27) makes note of this point, recounting that an "ossified vision of growth" had been a "roadblock on the way to wedding 'environment' and 'development'", adding that "decades of smokestack industrialization had left the impression that growth was to be invariably linked to squandering ever more resources". Under the influence of the 'appropriate technology movement', Sachs argues, the notion of development began to fragment into many possible developmental paths, and initiatives such as the Cocoyoc declaration had inadvertently supplemented this multifarious approach to technological progress with alternative visions of growth.

Although neither Bernstein nor Sachs mention the yet-unborn concept of ecological modernisation by name, it is easy to see the various intellectual threads beginning to combine. From internalising environmental costs, incentivising producers to invest in clean technologies, and 'getting the prices right' for consumers to make informed choices; to the notion that trade, markets, and economic growth could be tweaked enough—but not too much—to bring environmentalism into the field of capitalism, without upturning the liberal economic orthodoxy. The *political impossibility* that precipitated the fall of environmental Malthusianism and other anti-growth and anti-capitalist elements of the environmental movement, created the conceptual ingredients that not only enabled, but necessitated the rise of ecological modernisation.

The competing approaches of the Global North and South were irreconcilable on the points of free trade and market mechanisms, and on that basis, one could argue that the concerns of the North eventually took precedence. But the sentiment of the Cocoyoc declaration persisted, and while the overhaul of the international economic order would never come to pass, the discourses of differentiated responsibility and continued development survived.

In 1975, Maurice Strong stepped down as executive director of UNEP, and was succeeded by his deputy, Mustafa K. Tolba. While paying heed to the concerns raised by the Cocoyoc declaration, Tolba avoided anti-market rhetoric that might alienate OECD countries, but continued to promote the tenets of ecodevelopment (Bernstein, 2001, p. 58). Throughout the late 1970s, ecodevelopment was modified and refined, and gradually superseded by the language of sustainable development. "In general terms", writes Bernstein, "ecodevelopment literature of the 1970s and 1980s overlapped with that on sustainable development. The main difference was an elimination of neo-Malthusian overtones" (*ibid.*, p. 59). The elements of what we now call sustainable development were by then already in place, and its trajectory set. In the decade that followed, the underlying knowledge, assumptions, and direction of environmental politics at the United Nations remained largely unchanged.

In 1980, the *World Conservation Strategy* was published, which set out the combined principles of sustainable development (IUCN, 1980); in 1987 the World Commission on Environment and Development had published *Our Common Future*—the famous 'Brundtland Report'—which presented sustainable development as a pathway for the global economy (WCED, 1987); and in 1992, at the United Nations Conference on Environment and Development in Rio de Janerio, a concrete plan of action for the

implementation of sustainable development was agreed in the form of *Agenda 21* (UNCED, 1993)—none of which substantially altered the intellectual substance hammered out in the decades before. By the time sustainable development was in place as the consensus view at the United Nations, environmental Malthusianism had all but disappeared, and ecological modernisation had emerged as the principle means by which environmentalism could be reconciled with liberal economic orthodoxy.

The explanation of change from environmental Malthusianism to ecological modernisation does shift slightly, depending whose account of the *political impossibility* narrative is under examination. The consensus view is that Malthusianism dominated environmentalist thought throughout the 1960s and 70s, and the basic form of the narrative is to pit over-consumption in the North against overpopulation in the South. This simplified version appears throughout the literature, exemplified in a chapter by Cohen (2001) which sets out the accepted wisdom that there was once environmental Malthusianism, but now instead there is ecological modernisation. Cohen offers the common explanation that "the political power of (post-)industrial nations was sufficient to maintain a narrow problem definition of the factors responsible for environmental deterioration... not to consumption, but rather to rampant population growth" (*ibid.*, p. 21). But despite the best efforts of the economically advanced nations to preserve the problem definition as overpopulation, "pressure from newly empowered developing countries, and allied non-governmental organisations… proved too powerful" (*ibid.*, p. 21).

This explanation, however, omits detail as to how such a process could happen, who applied pressure to whom, and by what means. Cohen's account also implies that the environmental Malthusianism of the North was merely a means of sidestepping responsibility for environmental problems, which is too reductive given that environmental problems were primarily a Northern concern. Arguments pitting over-consumption against overpopulation occurred as much within the North as they did between North and South. As the more detailed accounts of both Bernstein (2001) and Adams (2009) show, the role of environmental Malthusianism in the *political impossibility* narrative is more subtle; a cloud looming over the discussions rather than a central theme. Its contentiousness was such that it was barely mentioned in exchanges between delegates of the North and South. Only outside of the United Nations, where the consent of the developing world was neither sought nor required, was environmental Malthusianism at the centre of environmentalist discourse.

This is among the most striking features of the *political impossibility* narrative. Throughout the vast literature on sustainability, intergovernmental agreements such as those made at Stockholm in 1972 are pitched as the most significant events, the milestones that mark sustainability's progress; at the same time, environmental Malthusianism is portrayed as the dominant environmentalist discourse of the 1960s and 70s. But the details of the *political impossibility* narrative reveal this to be a contradiction. If the United Nations is at the centre, then environmental Malthusianism is notable by its absence; whereas if environmental Malthusianism is central, then intergovernmental agreements are not the most significant events of that history. The resolution of the *political impossibility* narrative reflects this contention within the history of environmentalist thought; its outcome was the creation of new concepts, supplanting the problematisations of over-consumption and overpopulation with a pro-development, pro-growth, and pro-capitalist discourse.

Within the *political impossibility* narrative, ecological modernisation is much less visible, owing to the fact that it did not fully emerge until after the narrative's *dénouement*. What can be seen of ecological modernisation is the various intellectual strands beginning to emerge and combine—chief among them the Polluter-Pays Principle designed by the OECD. The Polluter-Pays Principle receives scant attention in the ecological modernisation literature. Hajer, for example, mentions it briefly in the context of the OECD's later role in the adoption of ecological modernisation by its member countries (1995, pp. 97–100), but chooses to focus on the influence of the environmental movement and changes in the philosophy of regulatory responses more broadly. Hajer and others (*cf.* Dryzek, 2005; Hayden, 2014; Mol and Jänicke, 2009; Young, 2000) mention that events in the 1970s prefigure the rise of ecological modernisation, but focus their analysis on the period after its emergence in the 1980s, rather than its conceptual roots.

In this sense, the intellectual history of ecological modernisation is not well studied. But it has been noted that the OECD became a champion of ecological modernisation after its emergence in the 1980s (Hajer, 1995, pp. 97–100), and while ecological modernisation is not only about economic instruments, the support of the OECD certainly fed into its plausibility, legitimation, and eventual dominance in environmentalist discourse. Despite its muted presence in the literature, the role of the OECD in the explanation of change from environmental Malthusianism to ecological modernisation should not be underestimated.

The *political impossibility* narrative is a sprawling epic that spans the Globe and everything in it. It tells a story about the most noble endeavours of humanity, at the highest levels of diplomacy, directing the most ambitious pursuit of scientific knowledge toward nothing less than the preservation of the species and the unity of all humanity behind a single purpose. Of course, in reality, the process was one of historical contingency, wherein a dominant scientific epistemology, combined with a globalist ontology, projected a specific form of rationality onto the world, promoting one version of modernisation and progress, and dismissing all others as backward, radical, or otherwise subordinate. This critical historicist view of development is now commonplace (since Escobar, 1995), but that need not detract from the sheer scale of ambition, optimism, and fortitude that characterises these momentous events in the history of sustainability.

2.1.4   Narrative 4: *the rise of feminism*

The explanation of change by the *rise of feminism* can be summarised as follows:

Malthusians of every stripe relied upon a relation of power in which the State or governing authority could make decisions about a woman's right to bear children and impose those decisions by hook or by crook; environmental Malthusians were no exception. With the rise of feminism, however, the notion that a woman's body is subject to control by the State, or anyone else, became anathema. Such was the shift in gender politics that it became all but impossible to openly plan population control via the removal of reproductive rights. This coincided with a major shift in the way that population was problematised. Overpopulation was reframed as a mere side effect of poverty and patriarchy, which could be resolved by increasing women's access to healthcare, education, and political power. Environmental Malthusianism eventually capitulated to this new paradigm—promoting women's emancipation as the most effective way to reduce population—but not before its collapse as the dominant discourse of environmentalism. In the absence of environmental Malthusianism, other strands of environmental politics came to the fore—not least ecological modernisation, which was agnostic on the issues of gender, poverty, and population.

The *rise of feminism* narrative is much less prominent but no less significant than the other three narratives. Although it is alluded to in many of the texts under review here, few actually rely upon it as an explanation of change (with the notable exception of Connelly, 2008, whom I shall discuss later in this section). This is somewhat surprising, since the changes in discursive practices forced by the *rise of feminism*—particularly discontinuities as to what is or is not acceptable speech on the subject of reproductive rights—was among the most decisive determinants in the recent history of environmentalist thought.

The significance of the *rise of feminism* may have slipped under the radar because its effects are largely indirect, challenging the basis of Malthusianism in general, rather than its environmental variant in particular. The fact that Malthusianism was going through its environmental phase at the time of its decline could be read as mere coincidence—particularly given that Malthusianism was well established long before environmentalism, and that the environmental movement continued to grow long after Malthusianism's decline. The fall of environmental Malthusianism need not necessarily be as strongly related to environmental politics as the other three narratives suggest; it may simply have been caught in the crossfire of a much older fight for the emancipation of women. The *rise of feminism* has since made it all but impossible to seriously suggest the control of women's bodies in the name of sustainability—which is not to say it does not happen, it most certainly does (Halfon, 2007; Hartmann, 1995), only that the dominant discourse renders it taboo.

There may be an additional reason why this particular relationship between feminism and environmentalism is less prominent in the literature: the movement known as 'eco-feminism' may have drawn attention away from the more subtle effects of the *rise of feminism* on environmentalist thought (see Adams, 2009; Diamond, 1994; Dryzek, 2005; Sargisson, 2001). Eco-feminism's radical claim to a special relationship between women and nature—relying upon a contentious discourse of gendered biological determinism—has overshadowed other intersections of feminist and environmentalist thought. There are strands of eco-feminism that draw parallels between the subjugation of women and the subjugation of nature, and by extension the emancipation of women and protection of the environment, but this is not pitched as an explanation of change. If anything, the eco-feminist discourse makes the argument that feminism has not affected change, and so the struggle must continue. Thus, the *rise of feminism* narrative is not to be conflated with eco-feminism. The *rise of feminism* tells of the effects of women's rights

on the government of population; it does not privilege the qualities of womanhood in the relationship between human nature and Mother Nature.

Environmental Malthusianism, when it emerged in the mid 20th century, did not begin a new conversation; it entered into an existing conversation about population growth and population control. Nor did it inject a new sense of contention into an otherwise unproblematic debate; Malthusianism had been deeply contentious from the off. Environmental Malthusianism was certainly new in that it problematised population through the lens of ecology, but it did not create an entirely new problematisation with an entirely new problem-solving apparatus; it latched onto, infiltrated, and to a large extent redirected an existing apparatus towards the ends of the modern environmental movement. The fact that it joined in with this existing Malthusian scene has implications for the way in which environmental Malthusianism developed. Not only did it inherit the strengths of its forebear—vast amounts of funding, an established network of institutions, and the support of powerful interests—but also inherited its weaknesses in its association with eugenics, racism, and other forms of biological elitism, not least the oppression of women (Greene, 1999).

Hartmann's (1995) historiography of reproductive rights enables us to situate environmental Malthusianism in relation to the 'birth control movement' that preceded it. She provides an account of the ways in which birth control has been used and abused, promoted and proscribed over the past 150 years or so, including the politics of population control in the mid 20th century. As is so often the case, Hartmann's narrative is primarily an American history—how Malthusianism entered America; how it affected the rest of the world via American foreign policy—but that does not devalue it. By the middle of the 20th century, America was the centre of the Anglophone world, and while it did not contain the whole story, it was certainly home to much of the intellectual development of environmental Malthusianism.

As a prelude, Hartmann offers a quick history of birth control throughout the millennia, highlighting the contraceptive technologies of ancient civilisations, to make the point that birth control is not new in terms of praxis; what is new is its widespread use in governmental strategy, economic policy, and ultimately as a tool of oppression. From the outset, Hartmann is careful not to lump early proponents of birth control into a single group. While neo-Malthusians sought to ease poverty by limiting population growth, feminists and radicals were concerned with the rights of women over their own bodies, whereas eugenicists saw it as a means to control genetic quality. As Hartmann puts it,

"These strange bedfellows combined to give the birth control movement its unique character: It carried within it the seeds of birth control as a liberating force, as well as a means of coercive population control" (*ibid.*, p. 94).

Hartmann recounts the early phase of the birth control movement through the story of Margaret Sanger, an activist and campaigner for women's rights. Sanger—in line with her contemporaries—saw the plights of women and the working class as part of the same struggle, and forged alliances with other radical socialist and anarchist groups. In 1914, she started her own newsletter called *The Woman Rebel*, in which she coined the phrase 'birth control' (*ibid.*, p. 96). The newsletter was eventually shut down by the authorities, and Sanger was sought by police on two counts of 'obscenity'. She fled to Europe to avoid arrest, but the birth control movement continued to grow in her absence. By 1916, public support for Sanger had led to the charges against her being dropped. Shortly afterwards, however, Sanger was arrested and imprisoned for opening a birth control clinic.

Sanger's flirtation with radicalism was short lived. Even before her imprisonment, Sanger's political thought had begun to head in a very different direction, and her alliance with other radicals began to unravel. Sanger's allegiance was to women's rights, not socialism, and at the same time her allies worried that the focus on women was detracting from the issue of class conflict. They argued that the socialist revolution would automatically usher in women's emancipation, and that a socialist state could keep any number of children out of poverty. They also worried that the prurient nature of the birth control movement was alienating working class traditionalists, who might otherwise support radical economic change.

The parting of ways between birth control and radicalism was abrupt and profound. By 1917, Sanger had formally split with her radical peers, just as the birth control movement had begun to split with radical politics. In 1921, Sanger co-founded The American Birth Control League with the aim of bringing respectability to the movement. She garnered the support of doctors and other professionals who were willing to publicly support birth control. In exchange, Sanger's organisation supported the doctors' call for legislation that would limit contraception to prescription-only—giving doctors a monopoly over its provision. This subsequently attracted the attention of others who had a different use in mind: "Eugenicists soon joined the birth control movement in growing numbers, providing it with a new direction to replace the discarded one of women's rights" (*ibid.*, p. 98).

Of course, the words and deeds of one person cannot be held up as the cause of birth control's shifting politics, but in Hartmann's narrative, Sanger's story acts as a proxy for the story of birth control, and just as Hartmann cautioned, birth control always contained within it the seeds of both liberation and coercion. By following Margaret Sanger's story, Hartmann simultaneously follows the political and intellectual journey of birth control; from the far left of radical socialism, to the conservatism of the medical establishment. The distance between its radical feminist roots and its eugenicist incarnation may seem vast, but in the personage of Margaret Sanger the two were ever-present. "As early as 1919", Hartmann notes, "Sanger's *Birth Control Review* published eugenicist arguments, including her own famous statement, 'More children from the fit and less from the unfit—that is the chief issue of birth control'" (*ibid.*, pp. 98–99). Sanger had always reconciled her demand for women's rights with the belief that some women should have more rights than others.

Throughout the 1920s and 1930s, Sanger's eugenicist leanings developed into full-blown biological elitism. In her writings, she warned that "the illiterate 'degenerate' masses might destroy 'our way of life'", and called for "the sterilization or segregation by sex of 'the whole dysgenic population'" (*ibid.*, p. 99). The development of Sanger's thought was a mirror of the birth control movement more broadly. The organisation Sanger had founded in 1921 eventually began advocating 'racial progress' through sterilisation, and in 1940 its successor, The Birth Control Society, invited former president of the American Eugenics Society, Henry Pratt Fairchild, to speak at its annual general meeting. There, he declared that one of the outstanding features of the conference was "the practically universal acceptance of the fact that these two great movements (eugenics and birth control) have now come to such a thorough understanding and have drawn so close together as to be almost indistinguishable" (Pratt Fairchild, 1940, quoted in: Hartmann, *ibid.*, p. 99).

This is the context in which environmental Malthusianism emerged. The reproductive rights of women, bound up with the birth control movement, was rationalised under the auspices of eugenics and medical science. It is unsurprising, then, that the first waves of environmental Malthusians were concerned not just with the problems of ecology and population control, but in most cases with eugenics as well. They gave little thought to the rights of the women who would ultimately bear the brunt of their plans. Indeed, at that time, feminism, Malthusianism, and eugenics were, to borrow Hartmann's term, 'bedfellows', and their relationship would persist for a

remarkably long time, well into the 1970s. The contentions of Malthusianism were fought on many fronts: race, class, and gender—not to mention the veracity of its empirical claims. But the eventual effects of the *rise of feminism* as the key determinant in the fall of Malthusianism were slow to take hold, and—perhaps necessarily—the last battle to be fought.

The reasons for this delay are unclear. Malthusianism and eugenics were very well established—and well-funded—having had generations to ingratiate themselves into the institutional structures of society, making them resistant to opposition (Greene, 1999). It was not only men who held Malthusian beliefs, women also read the same news and developed the same prejudices in response to the global population 'threat', without necessarily interpreting it as an issue of women's rights (Hodgson and Watkins, 1997). The 'crisis' rhetoric of environmental Malthusianism imbued the argument with an existential urgency and magnitude that overrode the more subtle and culturally situated politics of women's empowerment (Halfon, 2007). Feminist campaigners were fighting on a great many fronts, seeking equality in all areas where it was lacking. From politics and the workplace, right through to the home and family life, women faced a Sisyphean task to redress the imbalances of everyday life, and not every change could happen at once (Freedman, 2002). Even where there were opportunities for feminists to join forces with other maligned groups, against racism and classism, those opportunities were limited by the ingrained sexism in the early civil rights and socialist movements (Evans, 1980). Whatever the reason—or combination of reasons—the outcome was that the relation of power between Malthusians and women did not receive a serious challenge until the 1970s.

Halfon (1997; 2007) provides a detailed and insightful account of the *rise of feminism* in relation to the problematisation of population. Whilst Halfon's analysis is mostly concerned with the resulting population discourses in the 1990s, he does offer some explanation of change—and what constituted the change—from the 1960s onward. The key insight that Halfon offers in this narrative is on the nature of the change, as viewed from the perspective of feminist critique: "Within both demographic theory and policy production" notes Halfon, "the framing of women and their reproductive practices has shifted over time" (1997, p. 134). In Halfon's conception, it is the construction, or subjectivation, of women and their bodies, that constitutes the difference in population policy before and after the *rise of feminism*.

At its peak, environmental Malthusianism—and neo-Malthusianism more broadly—regarded women primarily as the 'vehicles' of population policy. Women provided the data for the all-important 'birth-rate' metric, which was the key indicator of whether or not the 'problem' was being solved, and women were the site of intervention for contraceptive technologies and training. Under the Malthusian gaze, even a compassionate view of women held that they had "unfulfilled desires", and were prohibited from limiting their own family size by "social and technological constraints" (*ibid.*, p. 134). The answer to this particular interpretation of the problem was to focus on the provision of contraceptive technologies, and allow 'rational self-interest' to do the rest.

In Halfon's account, it was only after a sustained series of critiques, levelled by demographers and feminists, that this simplistic and uncritical construction of women's bodies gave way to a more sophisticated understanding of the structural factors that constrain and govern women's experience and behaviour. "Women's reproduction is now seen as cultural" notes Halfon, "choices are not just economic and rational; rather, they are embedded in a broad array of familial, social, political, and other cultural practices" (*ibid.*, p. 135). Rather than viewing women as fully agentive, requiring only access to the tools with which to manage their own reproduction in a 'rational' way, women are now seen as being caught within powerful and sometimes oppressive social structures, which make it all but impossible to engage in meaningful change. The answer to this new interpretation of the problem is 'empowerment', which means "providing these women with the resources, knowledge, and desire to resist oppressive structures and to find their own desired levels of fertility" (*ibid.*, p. 135).

Halfon, in fact, gives two parallel reasons for the fall of Malthusianism, one being the *rise of feminism*, the other fitting what I have termed the *political will* of the New Right (2007, p. 42). Only one example in the literature surveyed here singles out the *rise of feminism* as the chief determinant of Malthusianism's decline—that of Connelly (2008). Connelly's explanation centres on the United Nations Word Population Conference held in Bucharest, 1974, where the reconceptualisation of the population problem as an effect of social ills, rather than a cause, was first mooted on the international stage.

The Bucharest conference was convened to establish a 'World Population Plan of Action', and was attended by delegates from across the United Nations. There was a push for population control attached to aid spending from the American delegation, but there

was also a great deal of dissent from various quarters on the practice of targeting fertility rates without due consideration of related issues—social, economic, or historical. There was a 'Non-Malthusian Coalition', who held a press-conference to highlight malpractice and abuse in 'vasectomy camps' and other centres of population control. There were also high-profile contributions from influential voices calling for "a deep and probing reappraisal of all that has been done in the population field" giving "new and urgent attention to the role of women" (Rockefeller, 1974, quoted in Connelly, *ibid.*, p. 315). This was in addition to the consistent opposition given by religious organisations, who were opposed to all forms of contraception or abortion, and used the ensuing conflict to their political advantage. Within this context, Malthusianism gained scant support.

In Connelly's words, "Bucharest was the Waterloo of the population control movement" (*ibid.*, p. 316), but it provided a glimpse of another kind of population politics; one that relied not upon the control of other people, but on providing assistance to people who happen to be embedded in complex social systems. It was being recognised more and more, by demographers as well as feminist campaigners, that the reasons why women around the world have large families is not only because of a lack of access to contraception, but because of a diverse range of locally and culturally specific, social, economic, and historical reasons. The view of experts in the field was that if poverty, health, and education were solved, then population growth would naturally fall.

The crossover was not smooth or instantaneous. Population controllers had been fixated on population targets and fertility rates for such a long time that any new insight into population dynamics was immediately interpreted as a new way to meet their targets. Just as 'family planning' had been hijacked by the Malthusian cause, there was always a risk that 'the status of women' would be bent to the same ends. But Connelly paints a picture of why things turned out differently this time, and he attributes it to the role of women in the decision-making process:

A far more important factor in fertility rates is whether women have had an education, and thus more opportunities to accomplish things besides bearing children… It is therefore the emancipation of women, not population control, that has remade humanity. In the family planning community, this link between education and fertility is treated like a revealed truth. It enabled feminists and environmentalists to forge a new, more enlightened consensus that promoted empowerment, not population control. In fact, it was something that many people knew all along. But for much of this history, lest we

forget, everyone from the Catholic hierarchy to the Population Council to India's Congress Party agreed that the preference educated women had for fewer children was a problem, even a threat. It was not until more of these professional women won a place in international debates that promoting education became the solution.

<div align="right">(ibid., p. 375)</div>

The transformation of population politics from oppressive to emancipatory became the dominant discourse at the United Nations, and would eventually become enshrined in international diplomacy as 'The Cairo Consensus' (UNICPD, 1995). The decisiveness of this shift was so complete that anyone researching population policy in the present would be forgiven for assuming that the history of population policy is the history of women's health. As Halfon remarks: "It is… unlikely that I would study this field of activity at all were I to come to this project today, failing to recognize population policy even as a coherent 'subject' in the present, and would instead take up some history of reproductive health or development projects focused on women" (2007, p. xvii).

In the history of sustainability and environmentalism, the opposite is true. Issues relating to 'population' enter at the point of Malthusianism, rolling straight into a critique of population control and its oppressive effects—not specifically on women, but in the realm of development more broadly. This speaks somewhat to the 'silos' of academia. It was only when I began to look outside of sustainability into all forms of Malthusianism that I first noticed the *rise of feminism* as a possible explanation of change. Reading Connelly's (2008) history of population control, I found his explanation to be at first contentious; an artefact of his polemical style. But on reflection, I came to agree—as I shall argue in my own analysis herein—the *rise of feminism* is just as important as the other narratives. It was invisible, however, because it was just outside of the field of vision for the study of sustainability or environmentalist thought. It was not clear at the outset, but has become clear over the course of this research, that the *rise of feminism* is an extremely important—and greatly under-appreciated—factor in the genealogy of sustainability.

Ecological modernisation does not feature directly in the *rise of feminism* narrative as it appears in the literature. It accounts only for the collapse of environmental Malthusianism, and the resulting vacuum in environmental politics. This is an effect of the general sequence of events—agreed across the literature—that the transition was composed of three separate stages: the fall of Malthusianism, the vacuum it left, and then

the rise of ecological modernisation. We can, however, infer some points from the *rise of feminism*, which relate to the suitability of ecological modernisation as the successive dominant discourse of environmentalism. The *rise of feminism* was about individual liberty and freedom of choice, both of which are integral the social and economic outlook of ecological modernisation. Furthermore, ecological modernisation has nothing to say on the issue of gender politics, and so does not immediately attract a specifically feminist critique. Thus, while the *rise of feminism* narrative provides a strong explanation for the fall of Malthusianism, the emergence of ecological modernisation will require further explanation.

2.2   Gaps, weaknesses, blind spots, and omissions

The historiographies covered in this review take the form of social, cultural, or political histories, written by both disciplinary historians and scholars simply using historical analysis as a means to understanding. None of the examples covered here use a Nietzschean or Foucauldian genealogical approach (Foucault, 1984; Nietzsche, 1967). As such, knowledge about the genealogy of sustainability remains fragmentary. Even the detailed and insightful analyses provided by Hajer (1995) and Dryzek (2005), which are closely related to the present work in terms of ontology and epistemology, take the form of 'discourse analysis' rather than genealogy. Hajer's historical chapter (1995, ch. 3) is introduced as a 'genealogy' of sorts, but does not provide an analysis of descent or emergence in the mode of Nietzsche or Foucault, nor does it rest on an archaeological analysis of the discourse on which to base such a genealogy. Both Hajer's and Dryzek's studies are indispensable guides to the discourses of both environmental Malthusianism and ecological modernisation—along with many other attributes—but there is still more to be learned about the rise and fall of each, and genealogy is one method of proving such knowledge.

At the other end of the spectrum, an edited volume curated by Darier (1999) contains multiple works that specifically and deftly apply Foucault's methods to questions of the environment and environmentalist thought. The chapter by Sandilands (1999) in particular, titled *Sex at the limits*, touches on the issue of environmental Malthusianism from a Foucauldian perspective; but this takes the form of a discussion, rather than a genealogy—a Foucauldian introduction to the subject matter rather than a

full investigation of the historical source material. Another chapter by Rutherford (1999) titled *Ecological modernization and environmental risk*, situates Foucault's thought alongside theorists of modernity such as Habermas, Beck, and Luhmann, in order to show how Foucault can help us to understand ecological modernisation and ecological modernities (see also Malette, 2009). Again, this takes the form of a philosophical discussion—indispensable to the student of environmentalist thought, but serving only to prepare the ground rather than build upon it. None of the works in this collection—nor any other I know of—investigate the discontinuity between the two discourses using the same philosophical rigour, and that is what I hope to provide with this research.

Of those in the literature who analyse both the fall of environmental Malthusianism and the rise of ecological modernisation, there is broad agreement as to the 'shape' of the transition. There were at least three stages to the process: first, environmental Malthusianism enjoyed broad support as part of the larger radical environmental movement of the 1960s and 1970s; secondly, some other force or culmination of events precipitated the fall of environmental Malthusianism leading up to the 1980s; then thirdly, the remaining vacuum necessitated a new form of environmentalism which kept some distance from its toxic forbear, thence emerged ecological modernisation. This basic form is consistent throughout the literature, and I have no reason to dispute it, therefore the questions on which I shall focus regard the causal mechanisms of the process. How did environmental Malthusianism fall? How did its collapse affect environmental politics so as to result in a vacuum? How did ecological modernisation fill the vacuum? The answers to these questions will form the substance of the genealogy, and central thread of this research.

There are, by necessity, a great many works that I have not mentioned at length in the space available here. On the history of sustainability (Caradonna, 2014; Coole, 2013; Dresner, 2008; Grober, 2012; Grober, 2014; Mebratu, 1998; Redclift, 1987; Robinson, 2004; Rothschild, 2011; Warde, 2011), or the history of environmentalism (Bramwell, 1989; Bramwell, 1994; Hays, 1987; Hays, 2000; del Mar, 2006; McNeill, 2001; O'Riordan, 1981; O'Riordan, 1999; Rome, 2003; Sale, 1993), or at the intersection between Foucauldian scholarship and the themes of sustainability (Agrawal, 2005; Bäckstrand and Lövbrand, 2006; Darier, 1999; Fletcher, 2010; Hobson, 2011; Luke, 1995; Malette, 2009; Neale, 1997; Rumpala, 2011; Rutherford, 2007). It is not that these works are in any way lacking, only that my points have been made using the few

references mentioned directly. All of these works have informed my thought, and given texture and depth to my analysis.

The four narratives outlined above are what I have taken from the existing literature. They do not act against one another, each does not assert itself to the exclusion of all else; they exist in parallel, informing, overlapping and interacting with one another to provide a rich and detailed view of the past. On this basis, it is not my intention to create a new narrative to supplant the others, nor do I intend to combine the others into a grand meta-narrative of sustainability. I have commenced my empirical work with these narratives in mind, thus everything I have produced in the course of this research cuts across those narratives, interacts with them, is in dialog with them. My research is situated alongside, within, and across those narratives, and hopefully my insights will help cast new light and create new possibilities for them—and for others still to come.

That said, it is not enough just to say that there were 'lots of reasons' for the transitions of history, and leave it at that. These four narratives do not constitute the four causes of environmental Malthusianism's demise or ecological modernisation's ascent. There has to be some mechanism by which change occurred, something which demonstrates how each cause resulted in this or that outcome—this is an outlook I intend to weave throughout my analysis.

There is a bias in the literature toward the story of the fall of Malthusianism and the vacuum it left, rather than the rise of ecological modernisation that took its place. This, however, does not mean that ecological modernisation appeared at random or by chance, nor does it mean that the two are unrelated. It simply means that the narratives tease out one strand of the story while glossing over others. By inference, it would seem that the forces responsible for the fall of Malthusianism, and those responsible for the rise of ecological modernisation, overlap somewhat, and the key events that precipitated the change are related—both directly and indirectly.

The fall of Malthusianism had a life in the popular imagination, saturating television and newspaper coverage, spawning a great many fictional films and novels— usually of the dystopian *genre*—so it is perhaps unsurprising that the historiographical narratives recounted here reflect that profusion in popular culture. The rise of ecological modernisation however, from the economic instruments of the OECD, to the policy deliberations at the Bundestag, barely register in popular culture and are all but non-existent in film and literature. It is not a gripping story. It is technical, esoteric, and procedural. There is no narrative arc; no great battle of ideologies; no Manichaean

struggle between good and evil. Ecological modernisation is boring—but it is important, and deserves to be brought to life.

3

Methodology: method, analytic, and concept in Foucauldian genealogy

I have a rather despairing piece of methodology, it is really my only piece of methodological advice to offer you, which is that there is no substitute for omniscience; you just have to know enough… If you read enough you get the answers.

(Skinner, 2014, 00:29:11)

The research presented here falls into the methodological category of 'genealogy'. This designation alone does not, however, narrow down the methods undertaken, because genealogy is an actively expanding domain. There was a time when the question would have been 'Foucault or Nietzsche?', but the genealogical approach has, of late, been ascribed to any and all of those whom have sought to uncover historical contingencies that might otherwise be mistaken as obvious, natural, or inevitable. Intellectual historian Mark Bevir, for example, traces the emergence of genealogy as a mode of historicist reasoning, encompassing not only "the leading self-proclaimed examples of genealogies offered by Nietzsche and Foucault", but the whole gamut of historicists spanning the 19th century, including Hume, Comte, Hegel, and Marx—all of whom having suggested that "human life and human societies could be understood properly only as the products of historical processes" (2008, p. 266).

Bevir's analysis is not, however, an attempt to overturn the specific genealogical mode heralded by Nietzsche and expanded by Foucault; he merely draws our attention to 19th century historicism to show the context from which genealogy emerged. That historicism was 'developmental', in the sense that history was still thought to develop along lines determined by overarching principles such as liberty, reason, or nationhood. The genealogies of Nietzsche, and latterly Foucault, were, in contrast, examples of a 'radical historicism', which rejected the teleological assumptions intrinsic to the

developmental view, and emphasised instead the interrogative principles of "nominalism, contingency, and contestability" (*ibid.*, p. 266).

For the avoidance of doubt, the present work is, essentially, a Foucauldian genealogy, and what follows in this chapter is my synthesis of Foucault's variegated methodology, tailored to this time and place, and to my locally and historically specific object of analysis. I take my cues from the mode of genealogy developed by Foucault (1977; 1978)—not the historicists of the 19th century—but the application of Foucault's methods has never been, and will never be, a straightforward process. For two reasons: firstly, that Foucault had an adaptive and reactive approach to method, which caused him to continually adjust his research practice depending on the object under analysis; and secondly, that Foucault's work is, by now, in danger of displaying some anachronism, having been written at a time when the intellectual context differed significantly from today's.

In response to these challenges, I have distilled the relevant methods, analytics, and concepts developed by Foucault, into a form that is portable to the current research, and situated these tools in a contemporary intellectual context, maintaining a critical position on the epistemological limits of their application. I have also supplemented these tools with additional precepts, concepts, and analytics, which reflect the achievements of other scholars working in and around the field—particularly those from the sub-disciplines of intellectual history and environmental history.

3.1   Locating Foucauldian genealogy

It can be difficult to place Foucauldian genealogy within a discipline, because Foucault's work cut across disciplinary boundaries. He was a philosopher, certainly, but his philosophy was at all times historiographical; he was a historian, arguably, but his historiography was at all times philosophical. Foucault's legacy extends through multiple disciplines, including history, philosophy, sociology, and cultural studies, to name but a few (see Skinner, 2002; Agamben, 1998; Dean, 1991; During, 1992, respectively), but that is not to say that he 'belongs' to any of these disciplines—he was, in a passive sense, 'cross-disciplinary', in that his investigations carried him from the philosophical into the historical, sociological, and cultural; but he was also, in an active sense, 'counter-disciplinary' in that his enterprise tested the limits of disciplinarity, challenging each to

absorb a little of the other in the pursuit of deeper understanding (Koopman, 2008; Osborne, 2015).

Foucault did not consider himself to be a historian as such, noting late on that his studies were "studies of 'history' by reason of the domain they deal with and the references they appeal to; but they are not the work of a 'historian'", instead, he clarifies that it was "a philosophical exercise", the object being "to learn to what extent the effort to think one's own history can free thought from what it silently thinks, and so enable it to think differently" (1985, p. 9). The extent to which Foucault could be classed as a historian did, in fact, change throughout his lifetime (Megill, 1987) and, I would argue, has changed considerably more since his death. I shall explore this a little further in the section below on intellectual and environmental history (§ 3.2), but for now it should suffice to say the discipline of history itself—particularly intellectual history—has morphed to accommodate the distinctly philosophical breed of historiography that Foucault and others have cultivated. As Deleuze has it, "Foucault has managed to invent… a properly philosophical form of interrogation which is itself new and which revives History" (1988, p. 49). Thus, despite his protestations, Foucault has posthumously become an accidental historian.

Likewise, Foucault did not consider himself a sociologist—despite his evident resonance with the discipline. When he mentions it in his writings and in interviews, Foucault treats sociology as an object, rather than a mode, of analysis (*cf.* 1970). In a detailed account of Foucault's methods, Dean cautions: "It would be inexcusable to remake him a social theorist or to regard him as a sociologist in disguise" (1994, p. 13). Instead, argues Dean, we should regard Foucault as both a 'philosophical historian' and a 'historical philosopher'. To be clear: this is not a reference to 'the history of philosophy', as in the study philosophers of the past; nor is it 'the philosophy of history', as in meditations upon historiographical practice. Rather, Foucault was a philosopher who used history to practice philosophy, and, in retrospect, a historian who used philosophy to understand history. The implications for the study of the social are significant, but ancillary to his intellectual project.

As for cultural studies, the uses of Foucault are profuse—and somewhat contentious. The desire to unravel contemporary cultural phenomena by recourse to Foucault's methodological toolkit has spawned a great number of books and articles. But the peculiar history of cultural studies predisposes it to an explicitly normative form of cultural critique (Hall, 1980). Foucault is deployed to expose the historical contingency

of race, gender, and class in order to puncture the illusion of permanence that enables their cultural reproduction. It is this normativity and subsequent instrumentality, however, which attracts contention (see Kendall and Wickham, 1999, p. 118). Foucault did not start with a normative ideal, and then search for ways to give force to his ideals by producing resistive knowledge; rather, he set out to study the construction of knowledge by others and the ways in which knowledge was implicated in the exercise of power. Any grist given to the wheel of hegemonic cultural critique was unintended, and the innovations of cultural scholars along those lines were independent of Foucault's genealogy.

My intention over the course of this research has been to cut across these disciplines in the same way that Foucault did, but this does not imply a precise replication of any single interpretation of Foucault's methods. As Dean establishes, Foucault's own accounts of his own methods are inconsistent, whereby "having offered accounts of method at certain points, he appears to jettison them or take them up in an entirely different fashion" (Dean, 1994, p. 2). Dean attributes this to a process by which Foucault reflects upon his methods in retrospect, offering an account of what he has done, rather than what he will do, or what he had intended from the outset. For Dean, the point is not to "codify" Foucault's methods, but to "find out how far one can get by reflecting on them in the context of particular problems" (*ibid.*, p. 2). Likewise, Rabinow and Rose identify that it is "not a matter of seeking to define a singular approach or a unique methodology which we can then apply to our current concerns", noting that Foucault himself would be "wryly sceptical" of any attempt to "discipline his thought and turn it into an orthodoxy" (Rabinow and Rose, 2003, p. vii). The closest we might come to 'applying Foucault's methods' in these respects is to have at our disposal the range of analytic tools that Foucault developed, and apply them to our own objects of analysis in the spirit of which they were intended—adapting, repurposing, and adding new tools to suit.

In addition to the adaptive and reactive nature of Foucault's methods, there is another, overarching consideration to bear in mind: the danger of methodological anachronism. As I write this sentence it is the year 2019, a full 35 years after Foucault's untimely death; 44 years after the publication of his first genealogical work (1975); 65 years since his first publication (1954). Foucault was writing before the Internet, before the mass digitisation of documents, before automatic translation, before 'big data', algorithmic processing, and artificial intelligence. As the saying goes, 'history is not what it used to be'—and nor is the analysis of text, in any other domain, for any other purpose (Butler, 2015). Foucault's romantic evocation of "dusty tomes, texts that are never read,

books that are no sooner printed than they are consigned to the shelves" (1980, p. 79), is now complemented by the smudged screens, squint scans, and pixelated text that typify the great book-scanning projects of the 21st century. One notable effect of this is on the speed with which one can work with documents. At once, the mundane tasks of data collection, storage, and retrieval are sped up by the tools of digitisation; but at the same time, analysis is slowed to a crawl by the sheer and unrelenting avalanche of texts that populate the archive.

Foucault started his intellectual project at a time when, as he himself remarked, "you had to be as a philosopher a Marxist, or a phenomenologist or a structuralist", but that he "adhered to none of these dogmas" (Foucault and Riggins, 1997, p. 125). As such, it is important to read Foucault in his own intellectual context: much of his argumentation was pitched in response to—or pre-emption of—Marxist, phenomenological, and structuralist critique. His work was situated within, across, and against those prevailing systems of thought. Today, Marxism and phenomenology are by no means the main pillars of philosophy, and structuralism is more readily found on the 'history of philosophy' shelf than in philosophical practice. Read in context, the relevance of Foucault's writings to contemporary political and philosophical concerns is not immediately obvious. The philosophical movement of which Foucault was part—what we might call the 'practice turn' in philosophy (Schatzki, 2001)—was not a *fait accompli*, but a process in which he was instrumental; in reality, each methodological innovation was met with scrutiny, and every overturned belief met with scorn (Davidson, 1997; Foucault, 1991; 1998). Foucault's writings have stood strong, but the intellectual context they now inhabit is new, which inevitably changes their meaning—and their effect.

Likewise, the political formations and transformations that Foucault studied, and those that he lived through, were not the ones we are experiencing today. Even his ground-breaking analysis of neo-liberalism, conducted in the 1970s (Foucault, 2008), was the study of a barely nascent political movement that had not yet found expression in the usual suspects of Thatcher, Reagan, and Pinochet (Mirowski and Plehwe, 2009). Foucault once remarked that "Marxism exists in nineteenth century thought like a fish in water: that is, it is unable to breathe anywhere else" (1970, p. 285); thus, it is important to ensure that Foucault is not simply a fish from the water of the 20th century, floundering on the banks of the 21st. The risks of anachronism must be confronted and resolved.

On the basis of these observations, I have undertaken this genealogy with a critical approach to the method itself. I have read Foucault's writings in their own historical,

political, and intellectual context, and extracted his analytics with great care, taking note of the local and historical specificity of their original use, and the limits of their re-application. In the process, I have developed a strict distinction between three elements of Foucault's work: *methods*, *analytics*, and *concepts*, which will serve as my methodological framework. This enables me to develop a research practice that is both classically Foucauldian in its epistemology, and appropriately novel in its expression. In the next sections, I lay out the epistemological implications of this 'taxonomy' of Foucauldian research, followed by a description of each of the *methods*, *analytics*, and *concepts*, and how they are used in this research. But first, a note on the relationship between genealogy and other forms of historiography, which the current work will undoubtedly be situated within and alongside—namely intellectual history, and environmental history.

3.2   Intellectual and environmental history

Foucault may well have claimed that he was not a historian (1985, p. 9) and, at first, historians may not have seen him as a historian (Megill, 1987), but historiography itself has moved—in no small part because of Foucault's contribution—to embrace that which was once considered out of step, such that the student of history today will inevitably be exposed to Foucault's methods, theories, and contribution to the discipline (Thacker, 1997). This is particularly evident in the sub-discipline of 'intellectual history', sometimes known as the history of ideas, which most resembles Foucault's project— albeit with a more ambivalent approach to power and a more diverse approach to method and epistemology (Kjellström, 1995). Given the subject matter of the present study, it is also worth noting the similarly new—by which I mean less than a century old—sub-discipline of 'environmental history'. The work I have produced here does not intentionally follow the methods or doctrines set out in either of these sub-disciplines, but it could still reasonably be described as a work of intellectual history, and would certainly feel at home in the broad church of environmental history, regardless of the method used.

Intellectual history is not, as the name might imply, the history of great intellectuals and their great intellects; it is the history of intellectual work and its products. An affinity with Foucault's 'history of thought' is immediately apparent, but it is worth teasing out the points of divergence so as to understand each the better. In its original

incarnation as 'the history of ideas', Lovejoy (1936) proposed a theory of the 'unit-idea'. Roughly summarised, the theory proposes that an idea is brought into being and then exists, travelling from mind to mind, composing in whole or in part the ideas that follow it—philosophies, scientific theories, political ideologies—the unit-idea forms the building blocks of thought, and can be traced through history as one might trace a life-history. In this sense, the unit-idea floats freely through history, informing, rather than informed by, its context. But this was the ultimate weakness of the unit-idea. A new generation of intellectual historians (Skinner, 1969) brought forward the simple proposition that ideas are conveyed through meaning, and that meaning is derived from context, therefore ideas are altered by their context. The notion of a stable unit-idea that transcends its own context is therefore untenable. The new intellectual history—as opposed to the old history of ideas—seeks to know ideas only through the context within which they were produced.

Foucault claimed that his project, the history of thought, was distinct from the history of ideas and intellectual history, for the simple reason that to study the ideas themselves implies "the analysis of systems of representation" (Foucault and Rabinow, 1984, p. 388), whereas Foucault was interested in the practices that establish those ideas within a discursive formation. Deriving meaning is a hermeneutic practice, even when done only through the prism of context, and this was at odds with Foucault's project, both archaeological and genealogical. The distinction is small but significant; Foucault did not study ideas; he studied the practices that establish and deploy ideas. Notwithstanding this divergence, intellectual history is not stuck in the theoretical modulation of 'meaning and context' over 'unit-ideas'. It is a thriving sub-discipline, diverse and expanding. Genealogy of all sorts—Nietzschean, Foucauldian or any other—has found a home in intellectual history. As for the present work, reading the methodological considerations of intellectual historians (Bevir, 1999; Hacking, 2002; Skinner, 2002) has only served to strengthen my understanding of Foucault's genealogy, and supplement my own reading of history.

Environmental history exists in the interstice between human and non-human nature. It is the history of how humans have changed the environment, and how the environment has changed humanity. It is the life of the natural world as lived through the cultures, stories, and records of human civilisations, and it is the life of humanity as lived on the stage of the natural world. Though obviously broad, it is not all-encompassing. 'Nature' could, by some accounts, include all things everywhere, but environmental

history confines itself to a nominalist relationship with nature and the environment. Its environment is the one inhabited by biologists and naturalists. As one might expect, sustainability features heavily in the literature of environmental history (Caradonna, 2014; Robin *et al.*, 2013; Worster, 1993), but despite its prevalence, a genealogy of sustainability has not been forthcoming. Studies are contained for the most part by the conventional methods of narrative historiography, occasionally overlapping with intellectual history (Forrester and Smith, 2018), but Foucault receives more of a passing nod than a leading role. The present work is not intended as a work of environmental history *per se*, but by virtue of its topic and objects of analysis it automatically qualifies nonetheless.

3.3   A taxonomy of Foucauldian research

> One of the great innovations in the techniques of power in the eighteenth century was the emergence of 'population' as an economic and political problem: population as wealth, population as manpower or labor capacity, population balanced between its own growth and the resources it commanded. Governments perceived that they were not dealing simply with subjects, or even with a 'people,' but with a 'population,' with its specific phenomena and its peculiar variables: birth and death rates, life expectancy, fertility, state of health, frequency of illnesses, patterns of diet and habitation. All these variables were situated at the point where the characteristic movements of life and the specific effects of institutions intersected.
>
> (Foucault, 1978, p. 25)

The moment I first felt certain about the direction of this research was when I read the above passage in Foucault's *History of sexuality, vol. I*. Foucault seemed to have identified something fundamental, which underpinned my entire intellectual project, but what was really fundamental was my misunderstanding. Foucault was describing a form of governmental rationality that he conceptualised as 'biopolitics', and within it I saw a ready-made account of my object of analysis: sustainability. I fell into the trap of assuming that my task was to show how Foucault was correct, to find his concept in other places, new places where he had never looked. But this would be the equivalent of starting with the answer and looking for a question that fits; it would not only be a

misunderstanding of Foucault's historical specificity, but would also be a perversion of what counts as knowledge, what can be known, and how we can know it. Upon realising my mistake, the direction of my research lurched back into uncertainty, but a new door had been opened to me, which led me to explore the question of how Foucault's concepts might be used.

There were several catalysts for my realisation, among them a shrewd examiner of my research progress who was quick to point out my unsophisticated use of Foucault. As well as an unusual textbook on Foucault's methods, in which the authors opine the lazy application of Foucault's concepts "like those do-it-yourself wall-filler products that promise certain results if you just 'aim and squirt', at whatever surface you care to pick" (Kendall and Wickham, 1999, p. 118). But I would like for now to pay particular attention to a paper by Koopman and Matza (2013), who delve more deeply into the problem of refashioning Foucault toward new lines of inquiry, and who propose a taxonomy of analytics and concepts to ease the process. Koopman and Matza offer their taxonomy only as an outline, open to criticism and revision. They note that theirs is "only one possible way to carve up the armature furnished in Foucault's work… we expect that our proposed taxonomy might be useful for others, even if only provisionally." (*ibid.*, pp. 819–820). On this basis—and in the spirit of mutual interest and debate—I shall open up Koopman and Matza's taxonomy, examine its assumptions and assertions, and perhaps hone its edge to make it better for the cutting.

3.3.1   Koopman and Matza's 'taxonomy for Foucaultian inquiries'

Although Koopman and Matza (2013, p .824) outline a number of different taxa (*Fig. 2*), the majority of their attention is focussed on *analytics* and *concepts*, and how those components might be applied in other research questions beyond Foucault's oeuvre. Their basic argument—with which I agree—is that concepts produced by Foucault are the result of his careful analysis of historically specific objects, and as such there is "an inherent danger in applications of Foucault's conceptualizations to fields where his thought did not range: his concepts were often tailored for the fields into which he was inquiring, and so it may well obscure more than it reveals to inject these concepts in unrevised fashion into wholly different fields" (*ibid.*, p. 825). By distinguishing between analytics and concepts, and identifying them in Foucault's work, this danger can be mitigated: "While

Taxa	Description	Exemplars
Analytics (or Methods)	Higher-order methodological constraints, limits, and heuristics that facilitate inquiry	Archaeology, Genealogy, Problematization (?), Ethics (?)
Concepts	Formulations emerging out of or produced by inquiry	Discipline, Biopower, Governmentality, Pastoral Power
Categories	Conceptual lenses functioning as analytical grids of intelligibility	Self/Power/Knowledge, Discourse, Practice
Topics	Elective subject matter	Psychiatry, Medicine, Punishment, Sexuality
Sites, Fields, and Objects	Foci of inquiry, or what inquiry is trained on	Archive, Fieldsite
Conclusions	Argument drawing together a constellation of concepts	Heteronormativity emerged as a basis for biopolitics in the 19th c.
Doctrines	Philosophical results	Nominalism (v. Universalism), Historicism (v. Structuralism and Phenomenology)
Styles of Writing	Language, narrative, and metaphor shaping how inquiry is communicated	Contrasting images of a torture spectacle and a prison timetable

Fig. 2: Koopman and Matza's 'taxonomy for Foucaultian inquiries'

concepts require a high degree of careful disinterring in order to be redeployed, analytics are much more portable in their original form" (*ibid.*, p.825).

Note that Koopman and Matza combine analytics with methods into a single taxon (*Fig. 2*), referring to them together as "the methodological constraints, limits, and assumptions by which inquiry can be conducted", adding that the "most familiar examples of analytics in Foucault's works are archaeology and genealogy" (*ibid.*, p.825). This is a point with which I take issue. Although it is possible to term any research method as a form of analytics, there appears in Foucault to be a hierarchy or succession, in which the methods of archaeology and genealogy encompass the entire project, whereas analytics such as power-knowledge, *dispositif*, or problematisation are directed toward specific elements within the project. Although these could be considered different forms of analytic, I would argue that archaeology and genealogy are more usefully thought of as *methods*—partly because Foucault used this distinction himself (*cf.* 1980, p. 85 on

How Foucault looked   What Foucault saw

Method	⟵-----⟶	**Analytic**	-----⟶	**Concept**

Fully transferable   Adaptable   Limited-transferable

Archaeology   Discontinuity   Sovereign power
Genealogy   Emergence   Disciplinary power
                 Dispositif   Bio-power
            Power-knowledge   Governmentality
            Problematisation

The recycling of concepts will weaken analytics
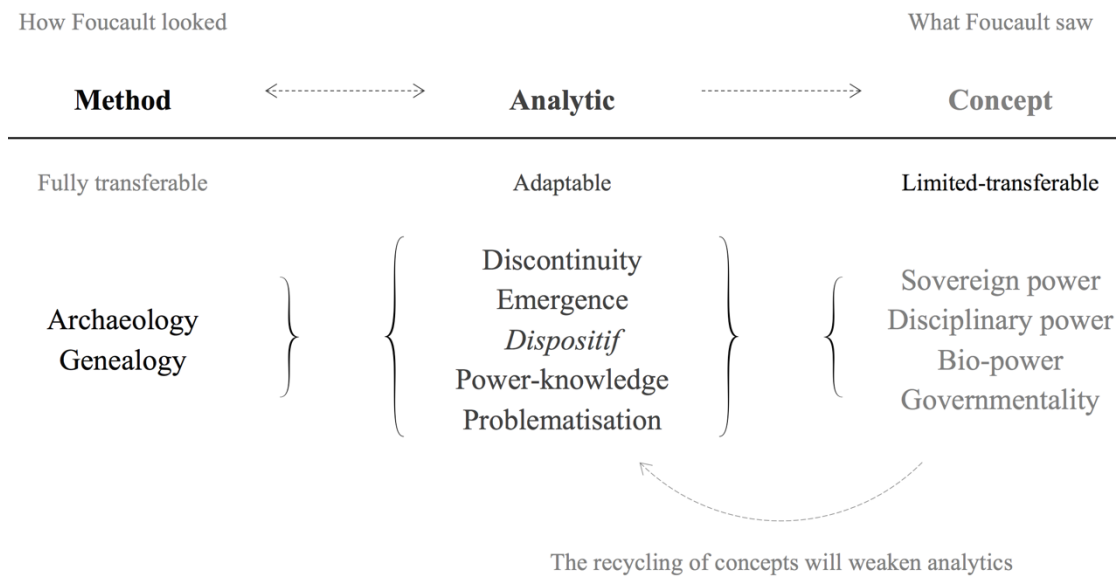
Fig. 3: My own [working] taxonomy of Foucauldian research

methods; 1997, p. 60 on analytics), but mainly because the 'portability' of these methods is greater. Methods are fully transferrable to any new object of knowledge, whereas analytics must be applied selectively and adapted to suit—genealogy can be applied to any object of knowledge; *dispositif* cannot.

Finally, Foucault's *concepts* were intended as explanations of historically specific phenomena, and thus if they are to be extracted and redeployed elsewhere, a great deal of work must be done to avoid the anachronism and decontextualisation that inevitably arises from their re-use. On this basis I propose three taxa for the practical application of Foucauldian inquiry: fully transferable *methods*, adaptable *analytics*, and limited-transferable *concepts* (*Fig. 3*).

3.3.2   My own [working] taxonomy of Foucauldian research

My taxonomy maintains a division between 'how Foucault looked' and 'what Foucault saw'. Broadly speaking, ways of looking can be directed toward any object of analysis; the results however, 'what Foucault saw', are specific to the inquiry that produced them.

Along this conceptual continuum, *methods* are the most portable, they may be presupposed before any analysis takes place. *Analytics* sit midway along this continuum, since they contain something of method and concept, and only become useful when they have something to be directed at, some element within the project. They are methodological inasmuch as they function as a tactical means of knowledge production; yet they are also conceptual insofar as they are a grid of intelligibility imposed upon the object of analysis in order to make some sort of sense of it. Analytics must be adapted to the object of analysis, and may be replaced or supplemented by other analytics where necessary, appropriate, or productive. As a method is applied to the research, opportunities are opened up to apply analytics, from which knowledge can be produced and organised in the form of new concepts.

The *concepts* that result from such analyses are local and specific. It may be tempting to see those concepts in other places, as general patterns of existence, but this would be fraught with epistemological pitfalls. Current debates in Foucault studies exhibit a split on the issue of whether Foucault's concepts can be taken as 'transcendental', wherein they reveal something about society or humanity as a whole; or as 'immanent', whereby they work only to explain the specific objects of analysis from which they were derived (Dean, 2013).

My own position is to assume that concepts are immanent, but that they still might appear elsewhere. Caution is the watchword; the dangers of frequency bias and anachronism will always work to undermine such a project. It might be appropriate to test a concept, as a scientist would test a theory, but it must be done using similar method and analytics, on a comparable object, as a scientist would repeat an experiment. In this sense it is less the production of new knowledge; more an affirmation—or imposition—of the old. It may also be tempting, perhaps even inevitable, that those old concepts bleed into new analytics, serving as inspiration or clues as to new patterns to impose, new stories to tell, new ways to chop up reality. But the recycling of old concepts must always be done with the utmost caution. In my own use, I have reserved Foucault's concepts for the 'abductive' portion of my analysis; meaning I use Foucault's concepts to interrogate my own findings, but only after an 'inductive' phase where I have applied my analytics to the data.

With this I have developed my taxonomy of Foucauldian research, composed of *methods*, *analytics*, and *concepts*. Those listed in *Fig. 3* are not intended to be an exhaustive account of Foucault's endeavour, nor of all possible permutations. They are

merely indicative, intended to function as a practical guide to the application of Foucauldian research, to show that *methods* are fully transferable, and *analytics* are adaptable, but *concepts* have limited transferability. In the following sections I shall outline each of these elements, describing both their epistemological function, and the ways in which I have used them in my own research.

3.4   The application of Foucault's methods

> If we were to characterise it in two terms, then 'archaeology' would be the appropriate methodology of this analysis of local discursivities, and 'genealogy' would be the tactics whereby, on the basis of the descriptions of these local discursivities, the subjected knowledges which were thus released would be brought into play.
>
> <div align="right">(Foucault, 1980, p. 85)</div>

Foucault's oeuvre is generally split into to two distinct methodological phases, known as 'archaeology' and 'genealogy'. It is not a simple case of having given up one to pursue the other; rather it is what Koopman (2008) describes as 'historiographical expansion'. Archaeology—putatively a form of 'discourse analysis', though distinct from the many others (*cf.* Wetherell *et al.*, 2001)—was the method Foucault used in his earlier works (1965; 1970; 1973) to uncover discontinuities in the development of systems of thought. In this way, Foucault revealed distinct foundations of epistemic practice—the *episteme* as he called them—which unified the major forms of knowledge production during a given historical period.

 After his most successful archaeological work, translated as *The order of things* (1970), Foucault attracted the attention of a group of eminent philosophers—collectively 'The epistemology circle'—who provided a serious and considered critique of the weaknesses, inconsistencies, and novelties of his archaeological method. In brief: archaeology was unable to provide an explanation for the causes of the *episteme*, or how old discursivities emerged or collapsed to make way for the new. An archaeology can only provide a snapshot of the what, where, and when; it lacks the sense of motion inherent to the how or why; it lacks the capacity to explain change. Foucault offered a robust response (1998), which he later expanded and published as *The archaeology of*

knowledge (1972), but, as it turned out, this was to mark the end of his so called 'archaeological phase'.

Koopman (2008) notes two reasons commonly given for Foucault's 'expansion' into genealogy: the first is purely academic—Foucault's admission of the deficiencies of his archaeology and his desire to mend them; the second is the social and political context through which Foucault lived—his activism after the events of May 1968, and the influence of his friend and fellow philosopher Gilles Deleuze. To the former, genealogy offers the explanatory potential missing from archaeology; to the latter, it offers a mode of political critique that enables us to think about our present as distinct from our past—and how it came to be distinct—resulting in what Foucault famously called "the history of the present" (1977, p. 30).

Genealogy—a term, and a philosophy, borrowed from Nietzsche (Foucault, 1984; Nietzsche, 1967)—can be considered an 'expansion' of archaeology because it still includes the analysis of local discursivities. But genealogy takes the analysis further, studying the ways in which those discursivities interact with other practices to produce change. In particular, genealogy is concerned with strategic practices, in which the discursivities rendered by the archaeological method are seen to be implicated in the exercise of power—and thus the mechanisms of change. In this way, the analytical dyad of knowledge-power became the basis of genealogy's explanatory capability, marrying the snapshot of knowledge and discourse, with the motion of power and change (1977; 1978). To the genealogist, archaeology is a method of data collection; it is the parsing of documents into statements, and statements into discursive formations, ready to be analysed as genealogy. In short: archaeology was once an end in itself, but is now the means to an end.

The description of 'phases' is problematic, as Foucault himself revealed in a 1967 interview—before The epistemology circle's critique—"no doubt my archaeology owes more to the Nietzschean genealogy than to structuralism" (Foucault, 1989, p. 31). Accounts of the correspondence between the two methods crops up in multiple analyses (Dean, 1994; Deleuze, 1988; Dreyfus and Rabinow, 1983), which are in addition, of course, to the accounts provided by Foucault himself. But they are clearly different animals—if archaeology is a bench-study of a discourse in captivity, then genealogy is a field-study of discourses in their natural habitat.

For my own purposes, I shall heed the words of all above. The method begins with archaeology, but ultimately it is directed at the interplay of discursivities and strategies.

The following sections comprise an exposition of this framework, split into *methods*, *analytics*, and *concepts*. First of all, I provide a description of the *methods*—archaeology and genealogy—and how they relate to my own research practice. Secondly, I round up the *analytics* used in the practical business of genealogical research, and indicate how they are deployed in the present work. And thirdly, I provide an overview of some of the *concepts* that issued from Foucault's own work, along with a description of their cautious use in my research.

3.4.1   Archaeology

> I shall call an archive, not the totality of texts that have been preserved by a civilization or the set of traces that could be salvaged from its downfall, but the series of rules which determine in a culture the appearance and disappearance of statements, their retention and their destruction, their paradoxical existence as events and things. To analyze the facts of discourse in the general element of the archive is to consider them, not at all as documents… but as monuments; it is—leaving aside every geological metaphor, without assigning any origin, without the least gesture toward the beginnings of an *archē*—to do what the rules of the etymological game allow us to call something like an archaeology.
>
> (Foucault, 1998, pp. 309–310)

Foucault's book *The archaeology of knowledge* (1972) is a detailed description of his archaeological method and its application—it is also extremely dense, complex, and difficult to read. The reason for this is that it was not written as an instruction manual for the budding archaeologist; rather, it was designed to offer a comprehensive epistemological defence of Foucault's methodology up to that point. The method itself—which is to say the praxis of archaeological research—is mercifully concise, deceptively simple, and pleasantly systematic.

It all begins with statements. Statements, as Deleuze (1988) eloquently unpacks, are utterances that perform a very particular function. They are not mere propositions or phrases; statements are the rules of a given discourse, dispersed through discursive practice, and recorded in readable text. Foucault offers only one example of a statement, which shows the difference between mere words on a page, and words that perform a function: "the letters marked on the keyboard of a typewriter are not statements… but the same series of letters, A, Z, E, R, T, listed in a typewriting manual, is the statement of the

alphabetical order adopted by French typewriters" (1972, p. 96). The words themselves, the sentence, is not a statement on its own; only when used to delimit the rules of a specific domain of knowledge does it become a statement.

To offer an example that relates directly to the current research: the discourse of ecology contains the statement that 'eco-systems are thermodynamic systems, receiving energy from the Sun and distributing that energy through the food chain toward its inevitable entropic state'. This statement delimits part of the rules of discourse on the natural world, based on the scientific discipline of ecology, which draws on the discipline of physics. Any discourse which does not keep within the bounds set by this rule, such as spiritual or symbolic interpretations of natural phenomena, would not be accepted as legitimate ecological science. Typically, a proposition or phrase bound by this limit might take a form such as 'we must live within the limits of the eco-system' or 'our position in the food chain'. Both of these utterances presuppose the basic rule set out by the initial statement; they only make sense within that framework, even without referring to it directly. This is the essence of discursive practice: not merely the act of engaging in discourse, but the practice of delimiting the rules of a discursive formation, and thus the rules of a given knowledge form (Bacchi and Bonham, 2014).

Statements, according to Foucault (1972), have some peculiar and consistent qualities. Firstly, statements are essentially *rare*, which is to say that very few utterances actually define the rules; propositions and phrases generally obey the rules, filling the pages of books with prose that twists and contorts to remain safely within the bounds of acceptable speech. Statements, in contrast, set the rules, and remain visible by structuring of the limits of the discourse that follows. Secondly, a statement can be recognised by its *regularity*, meaning that the statement is taken up and repeated in multiple places throughout discourse, but it always retains its essential meaning and function, which is to delimit and regulate knowledge. It does not matter whether a statement is being uttered for the first time by the first person, or the thousandth time by the hundredth person, the statement functions in the same way, retains all of its qualities, and loses none of its value. Lastly, statements are effective by their *dispersion*, meaning that statements are taken up in multiple variations. Statements may be deployed in different contexts, as observations or descriptions, interrogations or judgements, but they always retain their essential function in delimiting a specific rule. In this way statements traverse a discourse, forming a multiplicity of interlinking rules that structure the discursive formation.

Once the concept of the statement is understood and internalised, the reading of texts is a simple—if incredibly laborious—process of identifying instances of statements and mapping their structure; identified by their appearance or influence, and mapped by their relation to one another and to the discursive formation as a whole. The totality of these statements in their discursive formation is what Foucault referred to as an 'archive'. These are our raw data. They are to be scoured, curated, and pored over—as a statistician tabulates or a biologist dissects. As Foucault has it: "one must have at one's disposal the general archive of a period at a given moment… archaeology is, in a strict sense, the science of this archive" (Foucault and Bellours, 1998, p. 263).

The word 'science' is deployed deliberately by Foucault. He aims to imply that there is a facticity about statements, that there is little room for hermeneutic play. In the archaeological element at least, Foucault displays a "felicitous positivism" (1971, p.27), in which there is an attempt to capture the 'real' formation of discourse through the observation of actual discursive practices. For Foucault, the point of archaeology is not to "uncover an interpretation, to discover a foundation, or to free constituent acts; nor is it to decide on a rationality, or to embrace a teleology", rather, it is to "describe a group of statements, in order to rediscover… the specific forms of an accumulation" (1972, p. 141). The point is to uncover the practices performed in the formation of a discourse, not its hidden meanings or eternal truths.

While the documents of history are real enough, and the practices involved in the production and dispersion of statements has the facticity that Foucault ascribes them, I would not go so far as to say that there is no hermeneutic whatsoever. The text must be read and understood, and the intellectual context—for the historian or archivist—must be synthesised to derive meaning before classification. This meaning, however, can be approximated to a very high degree, and the objects of analysis are not the meanings themselves but the practices revealed by their production and dispersion. I would argue, therefore, that it is prudent to proceed on the basis that room for manoeuvre is extremely tight, and that the possibility of alternative interpretations significantly altering the analysis is remote. Thus, if it looks like a statement, and is dispersed like a statement, then it is most probably a statement (see Dean, 1994; Deleuze, 1988, for further discussions of Foucault's peculiar positivism).

3.4.2 The 'dominant discourse'

So far, I have outlined Foucault's approach to archaeology, but I wish to add a methodological innovation of my own: on the concept of the 'dominant discourse'. Foucault (2003, pp. 7–8) briefly touched upon the topic in the form of 'subjugated knowledges', but I wish to expand upon it. 'Dominant discourse' is a phrase that slips easily into academic debate, but its slipperiness belies a conceptual imprecision. How is it possible for a discourse to be dominant? Who, or what, does it dominate? How does it dominate? I have developed a way of theorising the dominant discourse which narrows its usage and enables it to hold up to scrutiny. First, a discourse is only discursive; it can only exist on a discursive plain. Second, a discourse cannot dominate a person, or a practice, it can only dominate another discourse—a 'subjugated discourse'. Third, the way in which it dominates is, of course, discursively, and the form of its domination can be read in the discourses themselves.

To give a clean example, take the dominant discourse of 'orthodox' economics, and the subjugated discourse of 'heterodox' economics. The orthodox discourse talks about itself as if it were the dominant discourse. It does not need to defend the basic statements of its formation; they are merely truth. When the orthodox discourse talks about the heterodox discourse, it paints the heterodox discourse as fringe, naïve, or otherwise unserious. Conversely—and crucially—when the heterodox discourse talks about itself, it does so as if it were a subjugated discourse—fringe, radical, 'taboo'—its statements must be qualified at every turn in deference to the dominant discourse, and when it talks about the orthodox discourse, it does so in terms of the orthodox discourse being dominant—even though it believes the orthodoxy to be false. In short: a dominant discourse talks about itself as if it were dominant, and talks about the subjugated discourse as if it were subjugated; whereas the subjugated discourse talks about itself as if it were subjugated, and talks about the dominant discourse as if it were dominant.

The effect of a discourse's dominance is not necessarily mirrored in the non-discursive. Take contemporary feminism for example. Feminism is a dominant discourse; to speak directly against feminism is a subjugated discourse. This is reflected in both the dominant discourse itself, and the discourse of the misogynists and would-be patriarchs, snarling and wounded at the loss of their dominance. But just because feminism is now a dominant discourse does not mean that the cause of feminism is already won. Structural sexism, inequalities, and cultural norms forge ahead. New discourses may figure in new

practices; but they have no immediate effect on the old. Environmentalism is also a dominant discourse; the environment is still in trouble.

3.4.3   On the gathering of texts

In terms of the actual practical business of archaeology, I began with a review of the secondary literature, which included every book or article I could find on the histories of sustainability, environmentalism, environmental Malthusianism, and ecological modernisation—somewhere in the region of three hundred publications, ranging from the 1950s to the present. Much of the content of the secondary literature is repetitious, and a close reading was not always necessary. There are some exemplars, however—those to which I have referred directly in my review of the literature in chapter 2—which are particularly erudite and incisive in their analysis, or complete in their overview of events. These titles—fewer than thirty in number—received a close reading, and their insights are taken as the apotheosis of current knowledge in the field. For the benefit of those who do not wish to repeat this arduous task, I have come to form the opinion that Adams (2009), Bernstein (2001), Dryzek (2005), and Worster (1994) should be required reading for anyone engaging with the history and philosophy of sustainability; between them they form an excellent primer on the topic, from root to branch.

The secondary literature served not only to show the current state of knowledge, but also to provide the starting point for my archive, based on all of the primary sources used by other scholars. I made note of where authors had given references for their assertions—sometimes spending more time in footnotes, endnotes, and bibliographies than in the body of the text itself—and attempted to gain access to those materials wherever I could. This was not always possible. Historians regularly delve into the 'boxes' of physical archives, which are often in different countries, or are otherwise inaccessible. One must make do, however, and I am satisfied that I have been able to access enough material to make a sound assessment of the archive. A very large proportion of my time was spent on this peripatetic process: reading secondary sources; noting primary references; hunting down primary sources; cataloguing documents; saving PDF files where possible; scanning chapters or taking screenshots where not.

A close reading of this first wave of primary sources revealed not only the slow drip of statements contained within, but also the references and inferences that informed those original authors, and thus a second wave of primary sources with which to furnish

the archive. In total this was somewhere in the region of two hundred texts, ranging from the 1640s to the 1980s. It included not only academic books and articles, but novels, newspapers and magazines, film and television, and even music. I read every novel on the theme of overpopulation published between 1950 and 1990—there were only nine—and watched every film with the same criteria—only eight. I complemented this with various television programmes, newspaper clippings, and documentary footage found in libraries and on video hosting websites. I wanted to immerse myself in the historical context of my archive, so as to mitigate the permanent risk of anachronism.

Where authors referenced their peers, I hunted them down in the same fashion; where they refuted the views of their antagonists, I sought those views as well. The vast majority of these primary sources do not receive any mention in the genealogy—something I consider to be a great shame; there is much more to be said and written about these historical objects, but that is for another research—a great many of them did not even contain statements relevant to my object of analysis, resulting in a lot of dead ends and unproductive reading time. But those that did informed me of the extents of the discursive formation, and enabled me to build an image of the discourse, with which I am now fully conversant.

The repetition of this iterative process resulted in the identification of an array of documents broad enough to glimpse the totality of statements that form the archive. It was ongoing throughout the period of research, not just a phase at the beginning, and even now I do not consider it to be 'finished'. It has taken several years of work and will take many more. This is the praxis of archival research. As Foucault says, genealogy is "gray, meticulous, and patiently documentary" (1984, pp. 76–77); this, in hindsight, is a severe understatement.

3.4.4   On the identification of statements

After the concept of the statement is understood, the actual identification of individual statements is relatively easy. The difficulty arises from the sheer volume of text and the time required to read and uncover the statements contained within—which are necessarily *rare* and *dispersed*. Days of reading can pass without any new statements appearing, and when one does, an interrogation must take place: has this rule been revealed elsewhere in the prose so far? Does this rule change the effect of other rules found so far? Do I need to return to a previous reading to re-evaluate? In this sense, reading is not a linear process.

Each new discovery affects the last. Each statement ripples out through the incomplete archive, casting a new light, revealing a new layer of detail in past readings, opening up a new array of possibilities for future readings.

The purpose of gathering statements is to reconstruct the discursive formation. The discursive formation is a multi-dimensional object; it is a system, a structure made of reciprocal rules, and statements are its building blocks. The way I have come to think of the discursive formation is as a kind of *algebra*. Each statement is an element in an equation: $a + b = c$. Just as a and b could be any number, and c is always their sum, the actual statement could be made of different words, but will always perform the same function. In this algebraic metaphor, discourse is made of the variables, the numbers; the discursive formation is the equation that governs them. This manifests in my use of language in the body of the research: where I talk about 'discourse', I mean the actual words uttered; when I talk about the 'discursive formation', I mean the rules that structure the discourse.

The presence of statements is revealed not only by their explicit mention, but also by the way they affect the rest of the discourse. This is something that cannot be fully understood from the outset, but as more statements are gathered, and their effects become more familiar, it becomes possible to 'pre-empt' a statement by inferring the self-imposed limits of the discourse that precedes it. Contrary to Foucault's assertion, there is definitely an element of hermeneutic involved at this stage. While the statements themselves are not something to be 'interpreted', the text that contains them is. I would describe it as a process of becoming 'attuned' to the presence of statements. I was not fully attuned to begin with, so I was regularly forced to return to a text at a later date, when I felt sure I would see it anew, or to check possible contradictions and inconsistencies. As I read, and as the totality of the archive gradually came to be at my disposal, the function of the statements, in their regularity and dispersion, became unmistakable. The archive is not a book to be read from cover to cover; it is a landscape to be explored. It requires boundless curiosity, patient attention to detail, and perhaps a slightly obsessive disposition.

Entire shelves can be filled with analyses of Foucault's archaeology (see Dean, 1994; Deleuze, 1988; Dreyfus and Rabinow, 1983; Foucault, 1972; Hacking, 1979; Koopman, 2008; Le Cercle d'épistémologie, 2012, for some of the more useful examples), but what I want to achieve here is not a comprehensive overview; this is merely an insight into how I have thought about and used archaeology in the course of this genealogy. Using this method, I collected my data, a snapshot of knowledge; but the real purpose is to reveal

the motion of history, the interplay of practices, and the exercise of power. For this, we must expand into the next method: genealogy.

3.4.5 Genealogy

> Genealogy does not pretend to go back in time to restore an unbroken continuity that operates beyond the dispersion of forgotten things; its duty is not to demonstrate that the past actively exists in the present, that it continues secretly to animate the present, having imposed a predetermined form on all its vicissitudes. Genealogy does not resemble the evolution of a species[2] and does not map the destiny of a people. On the contrary, to follow the complex course of descent is to maintain passing events in their proper dispersion; it is to identify the accidents, the minute deviations—or conversely, the complete reversals—the errors, the false appraisals, and the faulty calculations that gave birth to those things that continue to exist and have value for us; it is to discover that truth or being does not lie at the root of what we know and what we are, but the exteriority of accidents.
>
> (Foucault, 1984, p. 81)

Genealogy is a riskier venture than archaeology. It requires a bold leap into the darkness of a history concealed behind obfuscation and mythology. Where archaeology is the 'science' of the archive—the 'felicitous positivism' that deals in visible statements on a tangible page—genealogy is the 'diagnosis'; it peels back the skin of history to examine the tell-tale signs of its aetiology. Genealogy's concepts are constructed by theorisation, it draws its inferences by inductive and abductive reasoning. It is never truly able to 'see' its objects, only their effects, their traces, their signature. For these reasons, the praxis of genealogical research is completely different from its archaeological partner; genealogy occurs in the application of analytics, it exists for the most part only in thought, it is a philosophical practice.

Foucault never gave his genealogical method the book-length exposition that archaeology received, so we are left to gather morsels from various essays, lectures, and interviews, and to infer a great deal from his published research. Foucault alluded to his

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[2] This is actually a misunderstanding of evolution on Foucault's part: it is precisely the 'accidents, minute deviations, complete reversals, and errors', in both organisms and their environments, that drives natural selection and determines the evolution of species. Evolution is not teleological.

genealogical expansion in his response to The epistemology circle (1998), which became the introduction to *The archaeology of knowledge* (1972), but his first—one might say his only—full analysis and exposition of the method was a 1971 essay titled *Nietzsche, genealogy, history* (1984). In it, Foucault laid out what he took to be the 'rules' of Nietzschean genealogy:

Genealogy demands relentless erudition. To begin, Foucault makes an observation on the work of the genealogist—in line with the aspiration that one must 'read everything'—which is that the answers do not stand out to be found easily, and will not be found in a few lofty places as the product of 'large and well-meaning errors'. The answers are scattered across "a field of entangled and confused parchments", only to be accessed by the "vast accumulation of source material" and "relentless erudition" demanded of the genealogist. (*ibid.*, pp. 76–77).

There are no origins. The 'origin' is a central problematic for genealogy, because the search for origins is a search for the absolute beginning, the moment at which something comes into existence without reason or cause in the external world. Genealogy rejects this notion. It seeks to recover "not a timeless and essential secret, but the secret that they have no essence or that their essence was fabricated in a piecemeal fashion"; genealogy cultivates the "details and accidents that accompany every beginning" and finds its causes in "the events of history, its jolts, its surprises, its unsteady victories and unpalatable defeats". There are no origins, only events and their consequences. (*ibid.*, pp. 77–80).

Descent is the true objective. In place of the search for origins, the genealogist must substitute the analysis of 'descent'. The analysis of descent is not a search for family resemblances; rather, it seeks out the moments in which difference is produced. It is not an attempt to identify the unbroken continuity of traits or concepts handed down; rather, descent traces "the myriad events through which—thanks to which, against which—they were formed". Despite the allusion of its name, it is not quite right to think of genealogy as a 'family tree'; it is more like the 'life history' of a phenomenon, from its accidental inception, through its haphazard development, to its unexpected end. Descent is a record of chaos. (*ibid.*, pp. 80–83).

Emergence is the starting point. At the beginning of descent there is 'emergence'; "the entry of forces… their eruption, the leap from the wings to center stage". Not simply the first time something appears, but the event in which the new comes into conflict with the old, the space in which they "exchange their threatening gestures

and speeches". The analysis of emergence is concerned less with what was said, or by whom, and more with the "scene where they are displayed superimposed or face-to-face". In this sense, the analysis of emergence looks to the conditions of possibility, as well as the conflict that unfolds within. (*ibid.*, pp. 83–86).

There is no *telos*. The overarching theme that pervades Foucault's reading of genealogy is the rejection of teleology. The long march of progress is an illusion scratched over historical accounts to obscure the 'real' history beneath—the chaotic and haphazard events that hammer out their own path through the void of time. In the teleological view of history, events move from their purest origin, to progress along their preordained path, toward their inevitable *telos*. Genealogy seeks the diagnosis of the present; not the *telos* of the future. It traces the discontinuities of descent; not the continuity of progress. It finds genesis in the scrappy conflicts of emergence, not the pure essence of origin. The 'events' of history, therefore, are not affirmations of the extant; they are the usurpation of power, the appropriation of discourse, and the sharp change of direction. (*ibid.*, pp. 86–90).

Genealogy is active in history. Foucault goes on to interrogate historiography itself, its obfuscations and contradictions—a genealogy of history—the sting in the tail being that the emergence of genealogy is, itself, proof of historical continency. "If this fully represents the genealogy of history, how could it become, in its own right, a genealogical analysis? Why did it not continue as a form of demagogic or religious knowledge? How could it change roles on the same stage?" The answer being, of course, that it was never eternal. The emergence of genealogy is played out on "a scene where forces are risked in the chance of confrontations, where they emerge triumphant, where they can also be confiscated". The discontinuities of historiography are evidence in themselves of the discontinuous nature of history. (*ibid.*, pp. 90–93).

Genealogy is critique without anachronism. This, the last of Foucault's rules, closes on the question of anachronism, and the analytical mode which separates genealogy from other forms of critique. Genealogy does not treat history as an extension of the present, to be judged by the standards of the present. Nor does it cut across epistemic boundaries to hold one form of knowledge up to the standards of another. Genealogy seeks the vicissitudes of an emergence within the field of its own discourse—how it entered at the time, how it was received at the time, how events unfolded at the time. As a form of critique, genealogy operates entirely within the domain of its objects of analysis, without recourse to the values and norms held to be eternal by the righteous.

In these ways, genealogy is radical in both its historicism and its critique. (*ibid.*, pp. 93–97).

The essay was the beginning of Foucault's full commitment to genealogy. It represented his own 'leap from the wings', on to a course that would result in him becoming the 'other' great genealogist alongside Nietzsche. But it was not the end of his thought on the nature, purpose, and practice of genealogy. Foucault would go on to develop his own framework; incorporating the 'rules' he garnered from Nietzsche, but recasting them within the triad of *knowledge*, *power*, and *the subject*. Along these three 'axes', Foucault would construct his own genealogical method, as the analysis of 'discursive practices', 'technologies of government', and 'practices of the self'.

The analysis of discursive practice—made visible by the method of archaeology—reveals the formation of *knowledge*; not, strictly speaking, to chart the development of knowledge or the sequence of its formation, but to reveal the way in which knowledge is regulated, and thus the way in which truth is understood. The analysis of technologies of government[3], reveals the intentionality—the planning, the procedures—behind the exercise of *power*; which is to say the attempt to exercise power, since such an analysis only sees the procedures put in place, not their effectiveness. It is not concerned with domination or hegemonic power, but the mundane, technical, and procedural techniques of everyday government, directed toward specific problematisations. The analysis of practices of the self, the final addition to Foucault's genealogy, reveals the role of *the subject*—not merely as the recipients of subjectivation, but complicit in their own subjection, participating in discursive practice, cooperating in the technologies of government. Subjects are made by the deployment of knowledge and the exercise of power, to be sure, but they also make themselves—or rather, *we* make *our*selves.

Together, these three axes cross at the centre of Foucault's genealogy, forming a typology of objects of analysis, and creating a genealogical method distinct from its forebears. Foucault has interpreted Nietzsche's genealogy, and incorporated it into his own framework. I take this genealogy as the theoretical framework for my own research, wherein it serves as the philosophical basis of my overall approach (see Raffnsøe *et al.*, 2016, pp. 374–380, for a thoughtful exposition of Foucault's own philosophical and

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[3] Technologies are techniques which have been made portable. For example, techniques of discipline may be developed in the barracks, but then ported across into other situations where discipline is desired, such as schools or prisons, at which point those techniques become technologies. It is their repurposing, and re-application that designates them as such.

methodological reflection). The actual practical business of Foucauldian genealogy, however, takes place not in the general approach, but in the application of Foucault's analytics. In the following section I shall outline the specific analytics used, including a description of how they were applied in my research.

3.5   The application of Foucault's analytics

Evidently, the method of genealogy is a very different activity compared to archaeology; there is no straightforward sequence of events that easily describes the praxis of genealogy—its praxis is in the analytics used to interrogate the material and produce a theoretical explanation of change. From the long list of analytics which Foucault used across his oeuvre, I have extracted only those which are relevant to the present study, namely: *Discontinuity*, *Emergence*, *Dispositif (apparatus)*, *Power-knowledge*, and *Problematisation*. Each of these is outlined below, and each includes a description of how it was used, or how it affected, my research. As discussed above, the genealogical method is a philosophical practice, so it does not have the same practical aspects as archaeological data collection. Instead, genealogy occurs in thought and writing; thinking through the archaeological data using genealogical analytics.

3.5.1   Discontinuity

> The traditional devices for constructing a comprehensive view of history and for retracing the past as a patient and continuous development must be systematically dismantled… History becomes 'effective' to the degree that it introduces discontinuity into our very being—as it divides our emotions, dramatizes our instincts, multiplies our body and sets it against itself. 'Effective' history deprives the self of the reassuring stability of life and nature, and it will not permit itself to be transported by a voiceless obstinacy toward a millennial ending. It will uproot its traditional foundations and relentlessly disrupt its pretended continuity. This is because knowledge is not made for understanding; it is made for cutting.
>
> (Foucault, 1984, p. 88)

Historiographical narratives have a tendency to favour continuity in history—the way things were, leading directly to the way things are, and the similarities between past and present revealing some common thread of truth about humanity. But Foucault, from the outset, was more interested in *discontinuity*: it is the things that change which tell us about our present as distinct from our past, which reveal the local and specific truth of our unique historical conjuncture. The archaeological element of Foucault's work focussed most attentively on discontinuity—this being the vector by which we may recognise distinct systems of thought. But, to the genealogist, discontinuity serves a slightly different role. In genealogy, it is the interplay between continuities and discontinuities that reveals a more complex—and more rewarding—reading of historical change (Koopman, 2008). It is not simply a case of everything changing all at once; newly emergent practices and knowledges are situated within and against the already-existing. It is this interplay, its conflicts and accords, successes and failures, translations and co-options that reveal the motion of history.

In my case, it was a discontinuity that spurred this entire project: the discontinuity between environmental Malthusianism and ecological modernisation. This can be read, from an archaeological perspective, as a 'rupture' which displays two very different sets of discursive practice in response to what is ostensibly the same problem. Multiple authors have acknowledged this shift in environmentalist thought, as I explore at length in chapter 2, but the explanations proffered by those authors exhibit a range of views on the roles of continuity and discontinuity. They range from a strong reliance on teleological continuity—believing that the enlightenment values of reason and science will prevail on the long march of progress—to a more nuanced interplay between continuity and discontinuity. There is still a tendency in these more nuanced accounts, however, to place faith in governmental institutions as the 'centres' of power and the engines of change—historical determinants which transcend the specific object of analysis and belie a 'developmental' historicism that privileges the institution of statehood.

Only one of the existing historiographical narratives centres on a discontinuity—namely the *rise of feminism*—which also happens to be the narrative that resonates most strikingly with my own analysis (see chapter 6). This fact in and of itself raises an important epistemological question: has the analytic lens of 'discontinuity' predetermined the outcome of the research? I think it is safe to assume not. Firstly, because the genealogical method takes into account the interplay between both continuity and discontinuity; and secondly, because multiple other analytics deployed in the course of

the same research offer other vectors by which to interrogate the data. From the outset, I did not know that my analysis would reveal feminism to be so fundamental to the history of environmentalist thought. That conclusion was reached only after the application of various analytic tools; neither solely nor directly by the analysis of discontinuities.

3.5.2 Emergence

> Emergence is thus the entry of forces; it is their eruption, the leap from the wings to center stage, each in its youthful strength… not specifically the energy of the strong or the reaction of the weak, but precisely this scene where they are displayed superimposed or face-to-face. It is nothing but the space that divides them, the void through which they exchange their threatening gestures and speeches. As descent qualifies the strength or weakness of an instinct and its inscription on a body, emergence designates a place of confrontation
>
> (Foucault, 1984, p. 84)

To make up for the shortcomings of archaeology—specifically its inability to capture the processes of change—Foucault sought to augment his archaeology with Nietzschean genealogy, marking out what Nietzsche called the "*Entstehung*", or "emergence", as a means by which we might apprehend the motion that occurs between discontinuities. Emergence is not simply the moment at which a fully formed discourse pops into existence: "As it is wrong to search for descent in an uninterrupted continuity" writes Foucault, "we should avoid thinking of emergence as the final term of a historical development" (*ibid.*, p. 83). Rather, it is a process; the interplay of practices that lead to discontinuity. On Foucault's reading, emergence is always produced through a "particular stage of forces" (*ibid.*, p. 83), meaning not only the force relations between individuals, but the circumstances—intellectual, political, institutional—that must be navigated by the emergent discourse. The task of genealogy is to delve into the "haphazard play of dominations" that pervade this stage of forces, and re-establish the practices and strategies that mark them; "The analysis of the *Entstehung* must delineate this interaction, the struggle these forces wage against each other or against adverse circumstances" (*ibid.*, pp. 83–84)—the analysis of emergence charts the rise of a discourse, its practices, its conflicts, and the strategies of its success.

Foucault describes emergence as "the entry of forces… their eruption, the leap from the wings to center stage" (*ibid.*, p. 84)—as opposed to merely the first time something appears in history. Specifically, he is referring to the process by which a discourse comes into conflict with an established or dominant practice, the space in which they "exchange their threatening gestures and speeches" (*ibid.*, p. 84). Within this space, the emergent discourse is effective enough that it forces a reaction in existing discourses, either to refute the rules of the emergent discourse or to incorporate them, thus altering their own discursive formations. In this sense, the object of analysis for 'emergence' is not so much the person who spoke, nor even the thing that was said; it is the space within in which the conflict took place that is of interest. That is to say, it is the conditions of possibility that matter first; the conditions that made conflict possible, and determined the strategies deployed (Deleuze, 1988, p. 116). There we will find the reasons and the mechanisms of change; there we will see the operation of power rendered visible by the unfolding conflict.

Emergence plays a significant role in the present work, an entire chapter of which is devoted to the emergence of environmental Malthusianism (chapter 4). In it I have traced the role of concepts central to the discourse of environmental Malthusianism— chiefly 'ecology' and 'biological elitism'—charting the ways in which they have been taken, interpreted, translated, and adapted to make them compatible with prevailing governmental rationalities. These discursive practices created the conditions that made environmental Malthusianism possible, and as it emerged, it exchanged its 'threatening gestures and speeches' with established discourses on the 'stage of forces', unfolding the 'haphazard play of dominations' that revealed the practices and strategies inherent to its genealogy. While it was discontinuity that spurred this project in the first place, it was emergence that gave it motion.

3.5.3 *Dispositif* (apparatus)

What I'm trying to pick out with this term is, firstly, a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions… Such are the elements of the apparatus. The apparatus itself is the system of relations that can be established between these elements. Secondly, what I am trying to identify in this apparatus is precisely the nature of the connection that can exist between

these heterogeneous elements… Thirdly, I understand by the term 'apparatus' a sort of—shall we say—formation which has as its major function at a given historical moment that of responding to an *urgent need*. The apparatus thus has a dominant strategic function.

(Foucault *et al.*, 1980, p. 194)

The French word *dispositif* has no direct English equivalent. Translator Alan Sheridan (see Foucault, 1977) selects the word 'apparatus', which is a good approximation, and the most common English rendering, but does not fully capture the connotations of the *dispositif*. The word 'apparatus' denotes a device or instrument which has been designed for a purpose. This captures the technical aspect of the *dispositif*, but does not capture its discursive, strategic, or responsive nature, nor does it capture the historical, philosophical, or normative implications of its deployment.

A debate exists over how to deal with this incongruity. Bussolini suggests the archaic English word 'dispositive' as an equivalent, arguing that "it maintains crucial etymological and conceptual ties occluded by 'apparatus'" (2010, p. 86). Raffnsøe *et al.* echo the use of the English word 'dispositive', again citing etymological reasons (2016, p. 4), and augment the term into a 'dispositional analysis'—a portable analytic framework which can be easily redeployed in organisational studies. I do not agree with the use of the English word dispositive in the context of Foucauldian research, for the simple reason that, despite its etymological similarities, its actual English use—in connotation especially—does not correspond with the Foucauldian *dispositif*. I would argue that, in contemporary academic English, the unnaturalised form of *dispositif* can mean one thing, and one thing only: the specific analytical grid created by Foucault. When Sheridan first translated the 'apparatus', Foucault was not well-known in the Anglosphere; this is no longer the case. For these reasons, I shall use neither apparatus nor dispositive; I shall use *dispositif*, in its unnaturalised form, as the most direct and unambiguous signifier of Foucault's analytic.

The point remains, however, that elements the *dispositif* are occluded by the term 'apparatus'. As an apparatus, the *dispositif* functions as a multi-pronged attack on a problem. Knowledge and expertise are mobilised in the problem's definition and classification; technologies and infrastructures—machines, buildings, objects—are created or directed toward a solution; institutions—juridical, medical, charitable—are enlisted in their competencies. In short: the *dispositif* is the mobilisation of a social

solution to a social problem. But this technical description elides the philosophical dimensions that give the *dispositif* its significance.

Deleuze (1992) sketches out at least three of these dimensions. The first two are 'curves of visibility and curves of enunciation', meaning ways of seeing and ways of describing or rationalising the problematic object at the centre of the *dispositif*. Within a given discursive formation, there are limits to the possible ways of knowing and describing an object of knowledge; the limits of the discursive formation are therefore inscribed in the *dispositif*—and all of its elements—producing a technology of government that embodies the discourse from which it was hatched. The third dimension is 'lines of force', meaning the techniques and procedures put in place to exercise power wherever required in the solution to the problem. I have given a description of 'power' in the section on Foucault's concepts below (§ 3.6.4), but for now it should suffice to say that power is exercised by the strategic manipulation of unequal force relations. In the *dispositif*, technologies, infrastructures, and institutions are enlisted on the basis that they are able to exploit an existing force relation—such as the enforcement of law by police, or the re-routing of traffic by town planners. The very fact that these elements are able to have an effect, the fact that an unequal force relation exists and there is someone or something ready and able to use it, reveals a great deal about the society within which it occurs—what it accepts as normal, and what it can do with full legitimacy. The lines of force deployed in the *dispositif* reveal the structure of a society at that moment in time.

There is a lot more to be said about the *dispositif* (Agamben, 2009; Bussolini, 2010; Deleuze, 1992; Foucault *et al.*, 1980), particularly on its value as an analytic tool outside of genealogy (Raffnsøe *et al.*, 2016), but for the present work it plays a relatively small role—vicariously, in fact, through a related research authored by Ronald Greene (1999). Greene identifies what he calls the 'population apparatus', a global network of organised and philanthropic actors using every available technique to establish regimes of population control. I import Greene's analysis of the *dispositif* of population control, and expand upon it to situate the discourse of environmental Malthusianism within—and against—the governmental rationalities of the modern environmental movement. The crucial point being that the *dispositif* does not belong to the State, or to 'the' government, but to anyone who has the wherewithal to bring together that heterogeneous group of discourses, infrastructures, and institutions, and mobilise them toward a problematic object.

3.5.4 Power-knowledge

Perhaps, too, we should abandon a whole tradition that allows us to imagine that knowledge can exist only where the power relations are suspended and that knowledge can develop only outside its injunctions, its demands and its interests… We should admit rather that power produces knowledge (and not simply by encouraging it because it serves power or by applying it because it is useful); that power and knowledge directly imply one another; that there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations. These 'power-knowledge relations' are to be analysed, therefore, not on the basis of a subject of knowledge who is or is not free in relation to the power system, but, on the contrary, the subject who knows… In short, it is not the activity of the subject of knowledge that produces a corpus of knowledge, useful or resistant to power, but power-knowledge, the processes and struggles that traverse it and of which it is made up, that determines the forms and possible domains of knowledge.

(Foucault, 1977, pp. 27–28)

Power-knowledge—or knowledge-power—can be regarded as the central and most consistent of Foucault's analytics, at the foundation of both his archaeological and genealogical methods (Gordon, 1980). While power-knowledge was only implicit in his earlier works (1965; 1970; 1973), where specific knowledge formations prefigured the relationships between empowered and disempowered subjects; it was explicit and overarching for his first two genealogical works (1977; 1978), in which the correspondence between power and knowledge formed the basis of a range procedures directed toward the management of criminal and sexual deviancy. Archaeology is an 'analytics of knowledge', with the power element present but underdeveloped; genealogy extends to an 'analytics of power', with both knowledge and power in full flight (Rouse, 2005).

The power-knowledge dyad exists for the simple reason that "there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations" (Foucault, 1977, p. 27). If there is no power without knowledge and no knowledge without power, then any analytic which focusses on only one part is necessarily incomplete. Only the compound concept of power-knowledge can suffice in the analysis of either. Thus, in

genealogy, the analysis of knowledge, and the analysis of power, are always implicated through the analysis of power-knowledge.

With this, Foucault upsets the *cliché* that 'knowledge is power'. It is not a simple case of knowledge empowering the beholder with either the moral force of veracity or the strategic advantage of prescience. It is that all power relations are founded upon a knowledge formation that imbues its subjects with qualities, competencies, and legitimacy. Knowledge prefigures the thoughts and actions of individuals and alters the field of interaction, which necessarily affects the strategies and procedures deployed in the exercise of power. Similarly, we cannot say that 'power begets knowledge'. The production and regulation of knowledge through discursive practice is already imprinted by the matrix of power relations within which it exists. It is not simply a repressive regime in which the powerful decide what counts as real knowledge; it is a productive regime where cooperating parties, within a network of force relations, collaborate to regulate and disperse knowledge within its accepted discursive formation.

The power-knowledge analytic pervades every part of my research. In tracing the emergence of environmental Malthusianism and the entry of ecological modernisation, it is always with a view to capturing how knowledge is produced and structured in the presence of power relations, and how power is exercised and justified within the rules of discourse. It is, however, the moments of transgression beyond the bounds of acceptable discourse and beyond the acceptable exercise of power in which the 'lines' are made visible. As Foucault has it: "Relations of power-knowledge are not static forms of distribution, they are 'matrices of transformations'" (Foucault, 1978, p. 99). When power-knowledge moves, so to do the lines. Practices that were acceptable just a few decades earlier are cut down and expelled to the fringes of debate. The shifting knowledges that delimit Malthusian power—environmental, biological, economic—are themselves constituted by shifting power relations—race, class, gender—creating the motion of history. This can be seen through the prism of power-knowledge, and retold in the form of genealogy.

3.5.5 Problematisation

It seemed to me there was one element that was capable of describing the history of thought: this was what one could call the element of problems or, more exactly, problemizations… Thought is not what inhabits a certain conduct and gives it its

meaning; rather, it is what allows one to step back from this way of acting or reacting, to present it to oneself as an object of thought and question it as to its meaning, its conditions, and its goals. Thought is freedom in relation to what one does, the motion by which one detaches oneself from it, establishes it as an object, and reflects on it as a problem.

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(Foucault and Rabinow, 1984, p. 388)

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The word problematisation has two common uses—unhelpfully they were both used by Foucault. The first relates to research practice, to problematise a given object of analysis and disturb its obviousness; the second relates to historical practice, the problematisations that others have engaged in as part of their discursive practice (Bacchi, 2012). It is this second use that is of interest as a genealogical analytic: the problematisation as historical event.

Problematisation is not simply a matter of identifying a phenomenon and marking it out as problematic. When we continue along a path—along a set of practices—and we encounter a new phenomenon, if we simply use our pre-existing forms of judgement to mark it out as a problem, and use our pre-existing forms of practice to set about producing solutions to that problem, then, in terms of social practices, nothing has changed. This was not what Foucault meant by 'problematisation'. For Foucault, the form of problematisation that is of interest and import is where we stop continuing along a path, turn our gaze in upon our current practices, mark out the practices themselves as problematic, then set about solving the problem by changing our practices. In this way, problematisations serve as indicators of a changing discursive formation. They are the site at which objects of thought are brought into question, challenged, and then either retained or discarded. Problematisations are the site of emergence, and of the unfolding conflicts that drive historical change.

The history of sustainability is replete with problematisations, which are in many cases still raw. In the current research it was the problematisation of over-simplistic biological concepts that resulted in creation ecology and 'the' environment; it was the problematisation of humanity's relationship to the environment—an ecological problem—that spurred the modern environmental movement; the problematisation of environmentalism against the competing interests of development that necessitated sustainable development; the problematisation of biological elitism that forced environmental Malthusianism to capitulate and recapitulate across the decades; the

problematisation of Malthusianism that necessitated ecological modernisation; the list goes on, and at each of these moments the flash of light from each spark of conflict makes visible the moments of reflection and reconfiguration. Each problematisation lays bare the practices of knowledge, power, and subjectivity that play out in its wake (Deleuze, 1988, p. 116). But crucially, each problematisation is also the product of what went before: it is the emergence of a knowledge form that makes a problematisation possible. It was the emergence of ecology that made the humanity's role in environmental degradation knowable and thus problematisable; a knowledge formation that still serves the problematisations of sustainability to this day.

3.6   The [cautious] application of Foucault's concepts

Some of Foucault's most [in]famous outcomes are the concepts he created in the course of his research, but these concepts were not intended as simple frameworks to be applied to any object of analysis; they can only be re-deployed with great care—or not at all. On current debates in Foucault studies between the 'transcendental' and 'immanent' uses of Foucault's concepts, I err on the side of the immanent. Foucault's concepts are the most locally and historically specific elements of his work and therefore the least portable. That is not to say that they have no use, only that their use is significantly different from that of his methods and analytics. What follows is an overview of Foucault's most relevant concepts—on *governmentality*, and the triad of *sovereign*, *disciplinary*, and *bio- power*—along with a discussion on the pitfalls of their re-application and the ways in which they have informed my own research.

3.6.1   Governmentality

Governmentality is perhaps the most profuse of Foucault's concepts—which is surprising, since it did not appear in any of his own books. Governmentality was, rather, something which Foucault developed in his lectures at the *Collège de France* (2007; 2008), where it began more as an 'intermediary' concept—a 'working' concept—developed on the way towards what would eventually become bio-politics and bio-power. Foucault did return to it consistently throughout his lectures as a means of "freeing oneself from any would-be general Theory of Power (with all the capital letters), or from

explanations in terms of Domination in general, when analyzing the normativity of behavior, and in trying instead to bring out the history and analysis of procedures and technologies" (2010, p. 40). But governmentality itself was never meant to be a 'general Theory of Power', it was instead a means of reconceptualising the exercise of power as a range of specific practices—during a specific period—and thus, the analysis of power as the analysis of those practices.

For this reason, I began the present work determined to avoid anything that could be termed 'a study in governmentality'. I was—and remain—convinced that to set out with such an intention would be akin to wearing blinkers; that I would not see anything other than governmentality. As the research progressed however, one element of governmentality asserted itself within my analysis and became a natural part of it. In the process, I came to understand two things about governmentality: first, that governmentality itself is made up of several constituent parts; and second, that the reason governmentality is so popular among scholars is that the specific area of knowledge it deals with just happens to be the juiciest part of the story—to a certain mindset at least.

On the first point, governmentality is made up of several smaller parts, each with its own merits and limits. There is the historically specific analysis carried out by Foucault, which described a sequence of events that he labelled with "the ugly word 'governmentality'" (2007, p. 115). Then there is the general principle of governmentality that might—tentatively/tenuously—be applied to other instances of governmental practice which display similar traits. There are also the different precepts that make up governmentality as a whole. In its most basic form these include the presumption that governing must be done 'at a distance' (Rose and Miller, 1992) to conform to the politics of liberal societies; and that new problems must be translated into a form of knowledge amenable to the techniques of governing in order to be brought into the field of government. This final precept, to which I will refer as 'governmentalisation' (Raffnsøe *et al.*, 2016, ch. 7), is of most interest to the present study, as it was the practice of translating a problem into an amenable form of knowledge—in this case the interoperability between ecology and economics—which brought governmentality into this research. This is not a study in governmentality, but that specific element, the process of governmentalisation, has become invaluable to my own analysis.

The second point, that the peculiar appeal of governmentality is rooted in the specific area of social practice with which it deals, is rather less analytical and more normative—in the sense that it appeals to the tastes of those who are, for whatever reason,

interested in the mechanisms of power. What is striking about governmentality in this sense is that it deals not with the glittering careers of great leaders and their great nations, but with the mundane, almost imperceptible grind of the governmental apparatus as it slowly turns, out of sight and out of mind. Governmentality is not concerned with the antics of moustache-twirling Machiavels, devising diabolical schemes to conquer the world. Rather, it exposes the almost-automatic processes of governmental rationality, the assumptions and beliefs, types of knowledge and modes of action. Its character is less scheming and more managerial; its form is less epic and more bureaucratic. Governmentality—and the operation of power generally—is neither good nor evil, it is for the most part a great many people getting on with their work, doing what they think they are supposed to do, using techniques they believe will be effective, toward ends they believe to be right. The questions to be asked of governmentality, therefore, are about the construction of those beliefs, the composition of those techniques, and the system of those thoughts.

There are some insightful critiques of 'governmentality studies' on which to draw. Skeggs and Wood (2012, ch. 5), for example, highlight a mismatch between the 'governmentality' of media production, and their own study into the 'affect' on media consumers. Similarly, Barnett *et al.* (2008) go in search of the 'elusive subjects' of neo-liberal governmentality, only to find that the real lives of individual consumers—their ethical self-development and conduct in the marketplace—and the strategies aimed at conducting their conduct, fail to map neatly onto a predetermined governmentality framework. What both analyses reveal is that the assumed effects of specific interventions, when prefigured by a governmentality lens, do not necessarily match the actual effects or practices that emerge from specific contexts. In the case of Skeggs and Wood (2012), the governmentality studies in question were based upon 'textual analyses', meaning an analysis of the content of media interpreted through a theory of governmentality, as opposed to their own study of 'empirical audience research', in which they actually asked people for an account of their real practices in response. Similarly, in the case of Barnett *et al.* (2008), it was the engagement of focus groups that revealed the mismatch between the theoretical assumptions of governmentality and the real practices that emerged in response. The pitfalls of taking the concept of governmentality and applying it uncritically are clear; without supplementary empirical data of local and specific practices of the self, governmentality cannot render a complete picture of reality.

In my own methodological framework, I have designated governmentality as a *concept*, which affords it a minimal level of 'portability' into new research. That is not to say that it cannot be used; only that it must be deployed with the greatest of care. The epistemological trap is that if you look for it, you will find it—but will remain oblivious to all else. The challenge therefore, is to begin with an analysis of the practices implicit in the exercise of power, without making any assumptions about what the outcomes will be. A study of governmentality alone can only reveal the mentalities of government; it cannot reveal their effects. Thus, any inference of 'practices of the self' or 'neo-liberal subjectivities' can only be drawn from a separate analysis of the people supposedly effected. For those still interested in seeking out the 'procedures and technologies' that constitute governmentality, there are many fine resources at our disposal. There are Foucault's original lectures (2007; 2008) along with an early collection by Burchell *et al.* (1991); Dean's book length study (2010), along with later reflections by Rose *et al.* (2006) and Gordan and Jardim (2013); as well as a fresh, detailed, and thoughtful exposition by Raffnsøe *et al.* (2016). Governmentality studies are certainly possible, but they are not broadly applicable.

3.6.2   A note on 'environmentality'

A literature search on the topics of 'Foucault' and 'sustainability' will return a clutch of studies under various headings such as 'environmentality', 'green governmentality', or 'eco-governmentality' (Agrawal, 2005; Bäckstrand and Lövbrand, 2006; Darier, 1996; Fletcher, 2010; Hobson, 2011; Lloro-Bidart, 2015; Luke, 1995; Malette, 2009). Given the topic of the present work it seems apt to situate myself in relation to this highly specific and esoteric group. For the most part, these studies centre on the subjectivation of people who are either producers of something which causes an environmental problem, consumers of something implicated in an environmental problem, or inhabitants of a problematised environment—or all of the above. A study in environmentality would therefore look for the practices and procedures directed toward those producers, consumers, and inhabitants, for the purpose of regulating production, responsiblising consumption, or governing habitation. The thing that supposedly makes environmentality different from other forms of governmentality—and I would argue that it is not different at all—is that the knowledges by which these subjects are created and problematised are 'environmental' in some way—environmental science, environmental activism,

sustainable development and so forth. On this basis, however, it would seem that environmentality is an unnecessary distinction.

Environmentality is a neologism of a neologism. Foucault coined the first—governmentality—to describe something new, something distinct in the study of government and power. The neologism of environmentality suggests something new again, something newly distinct; but the original formulation of governmentality, in its most generic form, already includes all of the aspects required to study the procedures, practices, and strategies of government that make use of environmental knowledges. Luke describes environmentality as an effort to "bring governance of the state, society, and self into the ambit of 'ecoknowledges' and 'geopowers' as human and nonhuman populations are policed to provide and protect environmental biodiversity, resilience, and sustainability" (2011, p. 97). The policing of 'nonhuman' populations may well be an interesting site to study, but it seems unlikely that nonhumans will be amenable to the discourses, subjections, and technologies deployed in the 'conduct of conduct', nor indeed practices of the self. The analyses of governmentalities provided by Foucault were not ends in themselves, but means to an end: diagnostics of the present. The strength of governmentality is not simply in the description of various governmental practices; it is a way to access the unique strategies and subjections, knowledges and discourses, conflicts and resolutions that reveal something about the ontology of the present and of ourselves. Environmental knowledges are certainly part of that, but not to the exclusion of all else.

3.6.3   Sovereign power, disciplinary power, bio-power

The concepts of 'sovereign power', 'disciplinary power', and 'bio-power', are all related to, and set against, one another in Foucault's thought, so I will situate them in relation to one another in their descriptions here. Foucault invokes the concept of sovereign power as a device to demonstrate what existed before the development of modes of disciplinary power. It acts as a counterpoint to show how governmental rationalities changed—specifically in view of criminality and retribution. Foucault famously began his book 'Discipline and punish' (1977) with an account of the torture and execution of a prisoner accused of attempted regicide. The prisoner's gruesome ordeal was a public spectacle, with an elaborate stage show of mutilation and degradation—with jeering crowds to enjoy it. Foucault sharply contrasts this spectacle with a prison schedule from less than a century

later. A regimented daily routine of meals, exercise, and work, designed to 'rehabilitate' its subjects through the application of a disciplined lifestyle. But the point is not so much the method of retribution or rehabilitation; the point is the knowledge formation that underlies such a shift.

Sovereign power was the power of kings, the 'power of life and death', but for Foucault this was in reality the right to take life or to let live. The sovereign's power was exercised as a means of 'deduction', meaning a right to remove or to prevent; to appropriate taxes, labour, blood, freedom, or life. Power, in this instance, was "essentially a right of seizure: of things, time, bodies, and ultimately life itself" (1978, p. 136). But sovereign power finds its ultimate expression in juridical form, its essential rights crystallised in the *dispositif* known as law (Raffnsøe *et al.*, 2016, p. 245). Even in the absence of kings, the institutions of the law exercise sovereign power in the same 'deductive' sense; it limits and prevents, and where it does not take, it merely lets. You may not break the law that is written, but otherwise, you may do as you wish.

Disciplinary power is, in contrast, 'additive'. It is a normative instrument, an attempt to imbue subjects with desired qualities, to produce specific effects and behaviours. Disciplinary power begins with a normative ideal, and then deploys procedures and techniques to normalise its subjects toward that ideal. Where sovereign power tells you what you should not do, disciplinary power tells you what you should. Foucault sums this up perfectly with the use of an illustration (1977, plate 10). The title of the illustration is 'Orthopaedics or the art of preventing and correcting deformities of the body in children', but the image itself is of a crooked sapling, lashed to a straight splint. The splint represents the normative ideal; the tree is the delinquent subject; the rope is the *dispositif* of discipline. With this, Foucault demonstrates how knowledge formations cut across the rationalities of government: what straightens out the crooked forms of nature, can correct deformities in children, can discipline the deviancies of delinquents. Disciplinary power is the instrumentalisation of normativity.

One crucial point, which applies to all of Foucault's power concepts, is that they are not artefacts of periodisation; sovereign power did not end so that disciplinary power could begin (Dean, 2013). Each is a mode of power, a way of exercising power using the force relations in a given situation. Each exists in parallel with other modes of power, none of which to the exclusion of all else. Thus, when disciplinary power emerged as an acutely distinct mode of power, it did so in a supplementary sense; discipline operates alongside the law, complementing one another, serving the demands of different forms

of problematisation. The discontinuity revealed by the development of disciplinary power, however, gives insight into the drastically different knowledge formations that make possible new modes of problematisation, which demand new governmental rationalities, which result in new social practices.

This interplay between modes of power is elaborated by Foucault; "starting in the seventeenth century" he writes, "power over life evolved in two basic forms; these forms were not antithetical, however; they constituted rather two poles of development" (1978, p. 139). The first of these poles is disciplinary power, which centred on the individual, the body, which could be regulated and moulded, improved and enhanced, measured and judged. This was an 'anatomo-politics', a politics of the body. The second pole is 'bio-power', which focussed on the species, the population. Bio-power situates the human species on the plane of all life, its biological processes viewed through the aggregation of measurements—births and deaths, health and longevity, inputs and outputs. In contrast to the government of individuals, this was a 'bio-politics' of the population. "The disciplines of the body and the regulations of the population constituted the two poles around which the organization of power over life was deployed" (*ibid.*, p. 139).

Both disciplinary power and bio-power deal with normativity, but in opposite ways. Where discipline has an inner normative target, toward which the subject is be pushed; bio-power has outer limits, or tolerances, within which conduct must be contained (Foucault, 2008). Similar to sovereign power, these limits must not be transgressed, but unlike sovereign power, bio-power seeks to intervene in the 'conduct of conduct'—albeit invisibly or 'at a distance' (Rose and Miller, 1992). The point of intervention for bio-power is not at the moment of transgression, as with sovereign power, nor at the site of the individual, as with disciplinary power; bio-power operates at the level of the population. Its successes and failures are measured in percentages and volumes. It does not matter which individual transgresses, so long as a safe proportion of the population complies. The techniques of government at this level are pitched in terms of knowledge about the movements of populations—statistics—and procedures that affects those movements—environments, resources, incentives. However, it does so at all times by understanding the human species, in common with all other species, as a biological entity—a governmental rationality that cuts across all knowledge of life— hence the name 'bio-politics'.

Much has been made of bio-power beyond the works of Foucault himself (Agamben, 1998; Esposito, 2008), and this highlights the central point about these being

concepts rather than analytics. There are countless articles on Agamben's use of Foucault's historically specific concept of bio-power as a transcendental ontology of power; I shall select only one to make the point. Koopman (2015), for example, finds multiple instances of Foucault appealing to the simple fact that these are detailed, historically specific portraits of actual instances of the exercise of power. Koopman then goes on to identify the moments at which Agamben ignores this point and remakes Foucault's concepts into a grand theory of political power. Whether or not one agrees with Agamben's specific interpretation of Foucault is moot; the problem that we all must deal with, in no uncertain terms, is that these concepts are not immediately portable, and may not be portable at all. In my own case, I refer to both disciplinary and bio- power in my discussion of ecological modernisation (chapter 7), not as a theoretical framework, but as the political context of ecological modernisation's emergence. The effects of these forms of power, particularly bio-power, created the conditions that made ecological modernisation possible.

3.6.4   A note on power

Power is a spontaneously emergent multiplicity of unequal force relations. This, at least, is my own distillation of Foucault's 'theory' of power—inasmuch as he had one. Foucault was at pains to stress that he did not intend to provide a theory of power itself; "not a part or even the start of such a theory" (2007, p. 1). Rather, he was interested in the moments at which social practices became implicated in power, or the procedures and technologies developed in the exercise of power. But for a view of what he thought about power itself—as an ontological object or entity of sorts—we must make inferences from the great amount that he wrote and said around the topic. What follows in this section is one such outline of an ontology of power, which I shall explain working backwards through each element: a *spontaneously emergent*; *multiplicity*; of *unequal*; *force*; *relations*.

Relations: Power is a relational concept. It is not a substance; you cannot pick it up or put it down. It cannot be given or taken, won or lost. You cannot 'have' power (1978, p. 94; 2007, p. 2). Power is not a 'thing' in that sense, rather it is a concept we use to understand a relationship between things—between people and other people, between people and institutions, between people and practices. For this reason, power itself cannot be 'seen' in any direct sense, for it has no substance. As Foucault points out, the entities normally marked as the location of power—such as the state, or the law, or any

identifiable instance of its exercise—are in fact what he calls the "terminal forms" of power (1978, p. 92). They are its effects, its outcomes, they are the traces it leaves behind in its wake; but they are also the only evidence of its existence. As a consequence of this relational ontology, we cannot know power by its measurement, we cannot interrogate or observe it directly; we can only really know power it by its effects.

Force: The type of relation that the concept of power represents is one of force. 'Force relations' in this context refers specifically to political power, which excludes the types of power that might propel an engine or illuminate a bulb, but is not limited to the politics of parliaments and senates. Political power in this context simply means getting someone to do something that they would not otherwise have done. Making something happen requires the application of force, but this need not have negative connotations. It could be by force of argument, or force of personality, rather than mere brute force. Indeed, Foucault describes the use or threat of overwhelming violence as among the least stable forms of power, simply because it cannot sustain itself (1982, p. 789). When the threat of violence is removed the effect ceases, and the imminent desire to develop new forms of resistance works to continually undermine its effectiveness. If, by contrast, one applies the force of argument, or of belief, then the impetus for action can be internalised and reproduced without continuous reinforcement—it is self-sustaining. Of course, reality is never quite so simple, but this is the basic principle at work, the crucial point being that the 'force' of the relation is neither good nor evil, it is simply effective—or to paraphrase Foucault, power is not always repressive; but it is always productive.

Unequal: In order for a force relation to have an effect it must be unequal. One part of the relation must produce a force greater than the other's ability to resist. This inequality sets the direction of the causal chain that constitutes the exercise of power. Again, this need not be a repressive act, it need only be productive; the application of a force that makes something happen by overcoming other forces in its way. It is the inequality of force relations that engender states of power, but those states are always local, and always unstable (1978, p. 93). There is no hegemonic force relation between one entity and all others; there are only locally specific force relations borne of a particular context at a particular time. The exercise of power necessarily causes change, consequently altering its own context, which alters the balance of force relations. In this way power relations are inherently unstable.

Multiplicity: In reality, power does not occur in simple bilateral forms, rather it exists as a multiplicity of unequal force relations—a network of connections. Indeed, for

Foucault, power is omni-present, it is in every social interaction (*ibid.*, p. 93). Power is everywhere, not in the sense that it arrives from outside to pervade and infiltrate, but in the sense that it comes from everywhere. Power is produced by social interaction; it is a product of society. The multiplicity of unequal force relations that weave the fabric of power's composition serve as the platform of its exercise, the routes of its movement, and the arena of its conflicts. The exercise of power is a strategic enterprise, and an accurate reading of the multiplicity is what enables the design and deployment of successful strategies. To exercise power—as opposed to merely being swept along by it—is to manipulate existing force relations toward a desired result, and the multiplicity of unequal force relations pre-determines where, when, and how that manipulation can occur.

Spontaneously emergent: As a product of society, power comes into being spontaneously at the moment of social interaction. At any given moment, in any given social configuration, power spontaneously emerges as a result of the inequalities inherent in social relations. Power cannot exist on its own; it is continually produced and reproduced by the presence of societal connections. As the number of connections—or the size of society—increases, so too does the complexity of the force relations. Despite being spontaneously emergent and dependent upon social interaction, however, power does find continuity in the structures, institutions, and shared practices of society. In Foucault's words, power is 'crystallised' in institutions such as the state, or the law, or any of the other 'terminal forms' by which power is normally recognised (*ibid.*, p. 93). But in its essence, its operation, and its ontology, power does not exist as a stable entity that survives outside of society, it spontaneously emerges out of specific social configurations, and is continually renewed by the presence of social interaction. In short: power is a spontaneously emergent multiplicity of unequal force relations.

These arguments combine to form Foucault's view of power—and it is what I mean when I talk about power throughout this research. It is not a view of what people think power is, or how people talk about power, or even how people experience power; rather, it is an ontological appraisal of what power *is*. Any research that simply asks people how they think or talk about or experience power to be is not research about power itself, it is about people and their thoughts, words, and experiences (*cf.* Schiffer, 2007). To research power itself, the only data available are its effects, its terminal forms, its signature. The analytics of power are central to the method of genealogy.

3.7   The modifications of my approach

I focus on 'big names', which is something that Foucault avoided (Deleuze, 1988, p. 17). It is not that the discursive practice of big names lacks fidelity to the archive—they undoubtedly qualify. Nor is it that big names detract from the overall effectiveness of the genealogy. Foucault merely wished to press the point that discursive practice is not the preserve of figureheads and self-proclaimed intellectuals; the practice occurs throughout the discourse, no matter who is speaking. My choice to focus on names familiar to the literature, and likely to the reader, reflects my desire to situate myself within that literature, and to enter into dialog with the reader, on terms that are neither one-sided nor esoteric. But Foucault's point remains: whether uttered by the famous general or the unknown soldier, a statement carries the same value, and its effects are equal.

I did not, in the strictest sense, 'read everything' that was ever written on the subject. As noted earlier, the preponderance of documents that flood the 20th century, and the ease with which they can be accessed, creates a new problem for the 21st century genealogist: it would take many lifetimes to 'read everything' on some topics. As Foucault himself conceded: "It is obvious that the archive of a society, a culture, or a civilization cannot be described exhaustively; or even, no doubt, the archive of a whole period" (1972). The journals of centuries ago were sparse enough that a single reader can be reasonably certain of having consumed a whole archive, but for events closer to the present, the reader is struck with a stark compromise of breadth against depth; the broader the scope, the shallower the analysis. This was always the case, but as the list of publications continues to grow, the ratio of breadth to depth grows also. Here we bump up against the limits of Foucault.

Foucault's methods rely upon the human computer, the heuristic ability to separate 'statements' from other utterances, and the analytic nous to infer the triad of discursive practice, technologies of government, and practices of the self. They require *phronesis* (Flyvbjerg, 2001); a combination of wisdom, judgment, and experience that cannot [yet] be digitally synthesised. The limited scale of Foucauldian research is determined by the physical limits of the human animal, and at some point, our reach must exceed our grasp. This represents both a problem and an opportunity: it makes the analysis of some objects all but impossible for the old Foucault—perhaps a welcome respite for those who grow weary of his endless reanimation—but it also creates the necessity and the conditions for a new Foucault; methodological innovations that seek to synthesise

elements of the process, to break it down into smaller parts, automate what can be automated and retain what cannot for the peculiar talents of organic life forms. These possibilities remain just that—possibilities—but the problem, the limitation, is very much upon us. There is just too much text.

In the present study I navigate this problem in an unavoidably unsatisfactory way: I embrace the compromise of breadth versus depth, and make sacrifices of both to strike a balance. I have chosen a reasonably narrow scope, and I have delved as deeply as space and time allow. It is the archive that matters, not the documents themselves. So long as one's library is suitably representative of the archive of a given period, then the totality of statements will be present and accessible for the analysis. How does one 'know' that the library is representative? Without reading everything it is not possible to be absolutely sure. Instead, one must rely upon a phenomenon similar to 'diminishing returns'—the more you read, the fewer new statements become apparent, until it is reasonable to assume that there are no more, or at least very few, remaining. A targeted approach to reading, based upon a strong command of the existing literature, is the only way to streamline this process, and that is how I have approached the problem of scale.

Seasoned Foucauldians could no doubt identify more aberrations in my approach, according to their own doctrines and articles of faith, but these listed here are the ones which I have undertaken purposefully, and with due consideration—any others are down to my own shortcomings, or simple disagreements, for which I am solely responsible. There is of course a great deal more to say about Foucault and his methods, as demonstrated by the prolific literature known as 'Foucault studies' and the renowned academic journal of the same name. I have distilled only the most relevant aspects here, in a form that is intended to be accessible to a broad readership. To which end I only hope my selective omissions will serve to assist in the uptake of knowledge, rather than to hinder it.

4

The emergence of environmental Malthusianism

In this chapter, I trace the genealogy of environmental Malthusianism, first of all by outlining the structure of Malthusian thought, then by identifying its discontinuity with neo-Malthusianism, and finally by analysing its emergence as a distinct form of Malthusianism, based on a new ecological ontology of the environment. The emergence of this ecological ontology in the early 20th century produced and facilitated a series of problematisations that not only made environmental Malthusianism possible, but also created the conditions for what we now know as sustainability. The general importance of ecology to the environmental movement may be self-evident; its role as the foundational problematic for sustainability as a whole is not. Historians regularly trace the beginnings of sustainability back to techniques of industrial resource management at the turn of the 18th century (Caradonna, 2014; Chappells and Trentmann, 2015; Grober, 2012), but the existential crisis of sustainability that survives in our present—of global environmental change and the future of the human species—is distinct from simple resource management. My analysis shows that the specific ontological and epistemic formations at the core of sustainability emerge in the early 20th century with the birth of ecology. As such, a renewed focus on the environmental aspect of sustainability—beyond the confected triad of environment-society-economy—would yield a better understanding of its formation and problematisations.

4.1   Locating environmental Malthusianism

The discourse of Malthusians, from the Reverend himself through to the figureheads of the modern environmental movement, reveals a structure of thought that follows four

discrete steps—*axiomatic truth*, *problematisation*, *governmentalisation*, and *concrete intervention*—each of which having its own internal logic and external implications. Environmental Malthusianism is no exception, and in order to understand its emergence, it is necessary to consider these separate stages of thought in their specific historical context. In doing so it is possible to discern the moments of discontinuity that bring environmental Malthusianism into being—as distinct from the classical and neo-Malthusianisms that preceded it—and open up a window into the power relations at work behind the acceptance, uptake, and spread of environmental Malthusianism in the mid 20th century.

Arguments for and against Malthusianism tend to focus on different parts of the structure. Those *for* focus on the axiomatic truth of material finitude and the problematisation of that finitude; those *against* focus on the governmentalisation and concrete interventions meted out in the name of overpopulation. The practical upshot of this is that they are each engaged in a different argument, and as such can never find resolution. Some of the analyses proffered by environmental Malthusians such as Hardin (1974) and the Paddock brothers (1967) were notoriously callous in their disregard for human life—especially the lives of underdeveloped populations, who might 'overload the life boat' or fail the test of 'triage'. The importance of solving the problem of ecological limits overrode all other considerations; to them such human cost was the lesser of two evils. Opponents of Malthusianism can easily point to historical examples of concrete interventions that resulted in the ill treatment of poor and vulnerable people. Indeed, every repressive Malthusian intervention up until the 1980s was levied disproportionately toward the disempowered, with no examples of rich white communities suffering in the same way (Chase, 1975; Connelly, 2008; Greene, 1998). But at the same time, opponents of Malthusianism have never dealt with the initial problem of material finitude, instead either denying the imminence of limits or denying the limits of human ingenuity—neither of which wholly answers questions of the biophysical limits of the Earth or the thermodynamic laws of the Universe.

4.1.1 The four stages of Malthusian thought

The first stage of Malthusian thought is predicated upon a simple, *axiomatic truth*: the more people there are, the less stuff there is to go around. When taken in the abstract, this statement is largely uncontentious and effectively impossible to argue against. It says

nothing about the number of people or the amount of stuff, nor the distribution of stuff between them; it merely states a simple equation: the more people there are, the less stuff there is to go around. But, of course, it does not end there.

The next stage is a *problematisation*, based on a normative judgement, which states that there is something wrong with the relationship between the number of people and the amount of stuff—that there are too many people, or not enough stuff—and that this is a problem. This statement is also largely uncontentious, and still difficult to argue against, because it is still abstract. It does not refer to a specific group of people or a specific lot of stuff, nor does it constitute a call to action; it merely agrees with the axiomatic truth that the more people there are, the less stuff there is to go around, and makes the hypothetical point that if there are too many people, or if there is not enough stuff, then there is a problem. But again, it does not end there.

Having invoked the problem, the third stage is to decide that 'something must be done', resulting in the *governmentalisation* of the problem. This takes the step—or leap—from the inward realm of axiomatic truth and normative judgement, to the outward realm of government: the desire to impose one's will upon the world, to bend it toward a normative ideal. It involves the translation of the problem into a form of knowledge amenable to the techniques of government, and the formulation of a plan of action based on that knowledge. The objection levelled against this particular step is not specific to Malthusianism. Any attempt by anyone to govern the lives of others is always contentious, and therefore open to resistance, and resistance can only be overcome with the exercise of power. Whether that power is repressive or productive, coercive or persuasive, it is still the exercise of power, and still contentious. This does not negate the Malthusian argument completely; government is a fact of life and societies are shaped on a continual basis by the practices, institutions, and normative forces that constitute them. There are those who will never agree to anyone having control—whether malevolent or benign—over the reproductive rights of others, but if one agrees that having fewer people would solve the problem of having enough stuff, then—with other established moral, humane, and egalitarian norms intact—is there an argument that 'something must be done'? The point is fully contentious, but as of yet no concrete action has been taken, nor actual harm been done. This is not, however, where Malthusianism ends.

The final stage, after deciding that something must be done, is to do something: a specific, *concrete intervention*. This is where the most fruitful engagement with Malthusianism can take place—regardless of whether one is for or against it. To those

who are *for*, it is where a judgement can be made as to whether this or that technique is effective or acceptable; to those *against*, it is where the true costs of Malthusianism are revealed. The axiomatic truth that the more people there are, the less stuff there is to go around, is moot. The normative statement that the fewer people there are, the less of a problem there would be, is only in reference to the outcome, not the specific intervention. For those convinced that something must be done, this is no *carte blanche*; the established moral, humane, and egalitarian norms of society still exist. Only when the plans for a concrete intervention are revealed can a judgement be made as to whether these norms are observed, and the effects—intended or unintended—of a specific intervention become visible. Only then can the costs be truly known.

4.1.2   Classical-, neo-, and environmental Malthusianisms

The Malthusian problem has been adapted and repurposed toward many ends, but the basic conceptual dichotomy has survived: population growth *versus* material finitude. The theory espoused by the eponymous reverend, referred to here as 'classical Malthusianism', was only really prominent within Malthus' own lifetime, and was marked by a deeply religious morality. The essential problem, as Malthus saw it, was not the number of people as such, but the human suffering that would undoubtedly occur as the growth of the population outstripped the food supply. For Malthus, natural 'checks' to population numbers in the form of conflict, disease, and starvation were inevitable, and the best way to avoid such suffering was to reduce population growth. Malthus' solution, on that same religious moral basis, was simple abstinence; only by living a life free from sin could we stem the inevitable (Malthus, 1798; 1826). Following Malthus, many others agreed that there was a population problem, but were not necessarily bound by the same religious constraints as Malthus. These 'neo-Malthusians' were a diverse group, concerned about the persistence of poverty and other social ills. Neo-Malthusians were not averse to the use of contraception—which is the main feature that distinguishes neo-Malthusianism from its classical forebear (Micklewright, 1961).

The version of most interest here, environmental Malthusianism, is often used interchangeably with neo-Malthusianism (*cf.* Adams, 2009; Greene, 1999; Robertson, 2012), but I would argue that there is a significant difference. Environmental Malthusianism may be related to neo-Malthusianism, in that it problematises population growth and accepts solutions without religious constraints, but it has its own distinct

history, and the form of problematisation with which it engages extends beyond human suffering and class distinction into the non-human natural world; beyond localised economic resource management into a global ecological ontology.

From the name alone, what distinguishes environmental Malthusianism is the environmental. I shall discuss the genealogy of the environment in a little more detail below, but for the moment it should suffice to say that what we call 'the environment', and the environmentalism that seeks to defend it, is a relatively new concept, emerging in the early 20th century and becoming commonplace by the 1960s. When earlier classical and neo- Malthusians used the word 'environment' they were talking about something fundamentally different; they were talking about something which relates to a specific organism, something which shapes that organism's development and evolution. An environment had Malthusian 'checks' built in; God given limits beyond which a population could never grow. The point of thinking about an environment for classical and neo- Malthusians was not a concern for that environment itself, but for the misery that would be inflicted upon a population constrained by natural limits. There was never any question of humanity destroying the environment, and thus no reason to defend it. The closest the classical and neo- Malthusians came to environmental protection was a desire to maintain an environment most conducive to the flourishing of the people who lived within it (East, 1923; Knibbs, 1928).

A specifically environmental Malthusianism emerged at a time when 'the environment' had taken on the meaning we apply to it now: an object that exists independently of any single organism or species; an object that both shapes and is shaped by the organisms that live within it; an object that is not eternal and constant, but fragile and changeable. The environment became something that can and should be protected, and to the Malthusian mind it must be protected from overpopulation. There is of course a great deal of overlap between these two positions. The protection of the environment for environmental Malthusians is still argued on the basis that it must be done in order to prevent violent 'checks' to population by natural processes. It is still aimed toward the purpose of providing health, wealth, and happiness to humanity, as all Malthusianisms argue in some form or other. The difference rests on an ontologically distinct conception of the environment—and humanity's relation to it—which produces new instances of problematisation. Earlier classical and neo- Malthusians could not have been environmental Malthusians, because that environment did not exist.

4.2   The ecological ontology

Environmental Malthusianism emerged within the first half of the 20th century, catalysed by a single but momentous shift in ontology—the development of an ecological view of nature. The effects of this ontological shift cascaded through neo-Malthusian thought, altering the basis of three of its central concepts: environment, environmental limits, and population irruption. The emergence of environmental Malthusianism was not merely an *advance of knowledge*, not simply the development of these strands of thought along teleological lines, rather it was the absorption of new forms of knowledge into the field of government; their co-option, translation, and deployment in the development of new modes of governing. This view of environmental Malthusianism's emergence is not universally held throughout the literature. Other scholars tackling this area have applied different definitions and analyses. Their contributions are valuable, however, and warrant close attention, as their alternative analytic strategies can only serve to broaden our understanding of events.

Luten (1978) places the emergence of environmental Malthusianism after World War II, situated within a longer process to which he refers as the 'limits-to-growth controversy'. As Luten has it, "The post-World War II resurgence of the limits-to-growth issue can be attributed to writers who were as much conservationists as they were biologists. However, they were mostly from the utilitarian side of the movement. The majority of the active preservationists came along a little later, in the mid-1960s" (*ibid.*, p. 169). The distinction Luten makes between 'utilitarians' and 'preservationists' is a useful one. The utilitarians in this context were those chiefly concerned with resource management: the economic limits of the human species determined by the planetary limits of arable land, raw materials, and a liveable environment. The people whom Luten refers to as 'preservationists' saw an added dimension: the value of nature beyond being a mere handmaiden, and its conservation for reasons other than industrial production and consumption. The complexity borne of this distinction opens up a fissure between environmental Malthusianism and its predecessors, and the tension between resource management and conservation is something that characterises environmental Malthusianism as a separate discursive offshoot.

There is clearly an overlap between the discourses of preservation—or conservation—and environmental Malthusianism, in the sense that proponents of one were often proponents of the other. The conservation movement pioneered by the likes

of George Perkins Marsh and John Muir was already well established by the turn of the 20th century (Taylor, 2016), and no doubt fed the imaginations of those forging ahead with the development of ecological science. But in this analysis, I am focussed on statements made by Malthusians in direct reference to Malthusianism, in which case the ethics of conservation make infrequent and irregular appearances. For environmental Malthusianism, conservation was primarily about the management of natural resources for human consumption, rather than for ideals such as beauty or wilderness. In short: nature was a means to an end rather than the end in itself.

In terms of timing, if we are to consider the 'emergence' of environmental Malthusianism not only as the appearance of a fully formed discourse, but also as the conditions of possibility within which that discourse could enter into conflict with existing discourses, then it is necessary to go a little further back than the 'post-World War II' era suggested by Luten—which was essentially the end of a process rather than the process itself.

Robertson (2012) goes that little further back, placing the emergence of environmental Malthusianism in the interwar period, pointing to a "subset of Malthusians—led by Raymond Pearl and Edward Murray East writing about human beings and Aldo Leopold writing about wildlife populations", who "pioneered a robust kind of environmental Malthusianism that would grow in importance in the wake of World War II" (*ibid.*, p. 6). While it is certainly true that the writings of Pearl (1922), East (1923), and Leopold (1949), were instrumental in the development of environmental Malthusianism, I would argue that they do not themselves constitute instances of environmental Malthusianism, or at least the word 'environment' to those authors did not mean what it meant to the environmental Malthusians who later characterised the position. Pearl (1922) and East (1923)—to take the anthropocentric examples—were firmly neo-Malthusian in their concern, viewing the natural world as a limited space, which would constrain the growth of populations by way of its finite resources. The role these authors played in the emergence of environmental Malthusianism was the integration—some might say reintegration (Jonsson, 2013; Worster, 1994)—of biology and economics through the Malthusian problematic. This dialog between economics and biology was a necessary condition for the emergence of environmental Malthusianism, but while I agree with Robertson (2012) on timing, we diverge on meaning and context; the environment of Pearl (1922) and East (1923) was not the environment of environmental Malthusianism.

Historians whom have sought to identify it (including Luten, 1978; Robertson, 2012, above, but also Chase, 1975; Connelly, 2008; Desrochers and Hoffbauer, 2009; Greene, 1999; Jonsson, 2014; Mayhew, 2014; Pearce, 2010; Warde, 2016, among others) tend to trace the first fully formed instances of environmental Malthusianism to the year 1948, with the simultaneous but independent publication of two books: *Our plundered planet* by Fairfield Osborn Jr.[4] (1948), and *Road to survival* by William Vogt (1948). While these two books are almost always mentioned in the same sentence, it would be wrong to think of them as the same or part of the same work; Osborn and Vogt were very different characters, and where Osborn was concerned for the future of all humanity, Vogt was only interested in those who met his eugenic standards (Chase, 1975; Connelly, 2008; Robertson, 2012). Each of these books, however, bears the mark of environmental Malthusianism. They each speak of 'Man's relationship with nature' as opposed to the simple domination of it. They oscillate between the two poles of nature-as-resource and nature-as-partner, without resolving the tension. They are neo-Malthusian insofar as they are concerned with resources and survival, but the difference is that nature is conceptualised as an agent—be it friend or foe, partner or competitor; nature is a force that resists. No longer passive, nature reacts, and does so with the threat of annihilation. The discourse espoused by these two books is the earliest expression of environmental Malthusianism, through which the practices inherent in industrial production and consumption would be problematised, and according to which, strategies of government would be devised and deployed.

By 1955, and the convening of an international scientific symposium titled Man's role in changing the face of the Earth (Thomas, 1956), these facts had already been accepted: that the environment is an interconnected ecosystem, that the health of the environment has a direct effect on the ability of humans to fulfil their material needs, and that human activities have a direct—and detrimental—effect on the health of the environment. The conflict that marked environmental Malthusianism's emergence was by this time resolved and its dominance as a discourse was assured. But in order to arrive at this point, the knowledge that preceded it—the ecological view of the environment, environmental limits, and population irruption—had to come into the field of government; to become a form of knowledge that could be used to think and act upon the conduct of people across the globe. In order to understand the emergence of

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[4] I refer to Osborne as 'Jr.' to distinguish him from his father, Henry Fairfield Osborn, who was also a well-known scholar and Malthusian, but held very different views on race supremacy and eugenics.

environmental Malthusianism it is necessary to look back at these strands of knowledge, their interactions with one another, and the ways in which they formed and informed the governmental rationalities of population control.

4.2.1 'The' environment

The thing we currently call 'the environment' is a relatively new concept. The word itself—meaning 'encircling', 'surrounding', or 'enclosure'—was common in the late 19th century, but its use then was significantly narrower than its use now. The term had appeared first in the writings of Darwinian biologists before entering common speech. Darwin himself did not use it in his famous (1859) work, but in the decades that followed, others used the word to describe the ways in which a species' evolution was shaped by external factors. In its Darwinian guise, the concept called 'environment' bore two notable characteristics: first, that it was relative to an individual organism or species, as in 'your' environment or 'its' environment; and second, that it was a uni-directional force, in that you were shaped by your environment, but not *vice versa* (see Warde, 2016, for a more detailed account of these observations).

Into the early 20th century, with the development of ecological thought, those very characteristics were challenged and subsumed into a new conception of nature: that all life in aggregate could be considered a single object or 'sphere'; and that life simultaneously shaped and was shaped by its environment. This made possible the conception of a single aggregate environment, which was part of a multi-directional constellation of forces, all shaping each other. Over the course of a few short decades, 'your' environment became 'the' environment, which became—and still is—the primary means of conceptualising and problematising humanity's relationship with the rest of nature.

These two distinct conceptualisations of 'environment' are in fact radically different ontologies of nature. In the first conception, an environment is something the belongs to a specific organism—it is shaped by 'its' environment; you are shaped by 'your' environment. Ontologically this environment is brought into existence by the organism that inhabits it; it exists in relation to that organism. If you take the organism away, the concept that was its environment no longer exists. All that is left is a medley of other organisms, climate, and topography, that are no longer grouped together—or are grouped in a different way, as a geographical space or some other organism's

environment. The constituents of this environment are determined entirely by the life of the organism to which it relates; where it goes, what it interacts with, where it hides, plays, breeds, or sleeps, what it eats or is eaten by. Without the organism, this environment has nothing to constitute it.

The new concept of 'the' environment, emerging in the early 20th century, is the aggregated environments of all organisms on Earth. It is a single, global phenomenon that encompasses all living things and all of the natural systems on which they depend. It is the entire biosphere, along with all of the water it drinks, the oxygen it breathes, the ground below, and the sky above. Ontologically, this environment exists independently of any single organism. Take away an organism, or even an entire species, and the environment continues to exist, because it is no longer a set of relations stemming from a single organism; it is the totality of all habitable space and all that inhabits it.

This new conception of the environment did not replace or supersede the old; it is an additional concept which exists in tandem. However, it is this second conception, 'the' environment, which laid the foundation of environmental Malthusianism. Earlier Malthusian texts, when using the word 'environment', evinced the first environmental ontology—an environment that existed in its relation to humans; that shaped us, but was not substantively shaped by us. To them we could manipulate or reposition elements of our environment, but we would always be kept from altering its fundamental balance. Even in discussing the environment as a global phenomenon, Malthusians writing before World War II presented environmental limits as a 'check' on human populations, a limit that we would reach, but by which we would then be beaten back.

These statements are neatly summed up by Edward Murray East in his oft cited *Mankind at the crossroads*: "By thus moulding the environment to his choice, man has provided for and invited more people, and they have come. But what is to be the reward of these efforts at happiness when the world as a whole is fully peopled? Nature's laws will make no allowance for human desires. Either population must be consciously restricted to a point where individual happiness throughout a long life is possible, or civilized man will be no better off than man of the Stone Age, for he will be repressed in exactly the same way" (1923, p. 40). East does not conceptualise our environment as a system of interrelated processes within which we are enmeshed; East sees our environment as an immutable barrier that contains us, that will force us to reverse back down our teleological path if we choose to over-populate.

East's contemporary, George Handley Knibbs—whom was at odds with East in some other respects—also subscribes to this view of our environment. Knibbs, in his equally well-cited work *The shadow of the World's future*, cautions: "We do well to remember… that the possibilities are, after all, limited by the nature not only of Man himself, but also of his environment" (1928, p. 15). Likewise, Raymond Pearl in *The population problem*, referring to an earlier work by Knibbs, confirms the belief that "population, so far as we know, always has grown and certainly is now growing at a rate which, if continued, will some time completely populate the habitable portions of the earth" (1922, p. 636). Each of these authors are exemplars of the neo-Malthusian discourse on environment. They write explicitly at the intersection of Malthusianism and environment, but in doing so, they exhibit a pre-ecological understanding of the natural world; to them our environment is a space that is rapidly filling up.

It is only with Osborn (1948) and Vogt (1948) that the second environmental ontology is addressed through the prism of Malthusianism—as an independent phenomenon that exists beyond human solipsism, an object with which we have a bidirectional relationship, an entity that shapes and is shaped by us, a system that can collapse just as a population can collapse. Neither Osborn nor Vogt eschew the concerns of neo-Malthusianism. Their argument is still one of resource management; the consequences of environmental destruction are still a shortfall of food and industrial materials, and the conflict, disease, and misery that would follow. What Osborne and Vogt introduce is one new element—a fundamental element—a theory of what an environment is and how it works. In short, they introduce an ecological understanding of the environment. While their normative concerns remain almost identical to the neo-Malthusians, they bring Malthusianism up to date with the latest thinking in biological science: the ecological view of nature. For Osborn and Vogt—contrary to the beliefs of their predecessors—the environment is something to which we belong. Its delicate balance is something we have the power to disrupt, and from the Malthusian perspective, the more people there are, the more likely we are to disrupt it. This is environmental Malthusianism.

4.2.2   Environmental Limits

The difference in ontologies between the old and new conceptions of environment were accompanied by differences in the understanding of environmental limits. Malthus

himself was explicitly concerned with environmental limits—he even did so in a global sense, considering all of humanity and our total environment—but Malthus' thought on our environment extended only to how much space or capacity there was for people to make settlements, produce food, or exploit resources (Flew, 1970). This is distinct from the environment as an ecological system in which we are enmeshed; an agent in its own right, with its own inputs, outputs, and variables. Environmental Malthusianism is built on an understanding of the environment as much more than just a space to fill with the fruits of human labour; humanity and the environment became viewed as partners in a relationship, and as such, environmental limits took on a wholly different character.

The old environmental limits were a Malthusian 'check', a set of iron laws that curbed the population of every species. Even in possessing the ability to manipulate our environment, we could not breach the ultimate barriers of tillable soil and drinkable water. Both classical and neo- Malthusians set these environmental limits alongside the limits of the human animal. For them, we could not escape the innate human traits that convert scarcity into conflict, nor the processes by which proximity enables the spread of disease. These limits were not an ecological problem, they were a problem of space; we were trapped within the confines of a nature whose limits were predetermined.

The new environmental limits are ecological. Population growth and the concomitant growth in the activities of the populace, puts 'pressure' on the environment causing it to change. These changes could conceivably render the environment uninhabitable to humans, not simply by over-extending food production or habitable space, but by transforming the natural systems which sustain such production, and possibly even forcing environmental conditions to fall outwith the narrow ranges of temperature, climate, and atmosphere that make human life possible. In the new conception, population pressure can transform the environment before the old Malthusian checks of food shortage and conflict have a chance to work. Limits are not barriers that we bump up against; limits are a multiplicity of lines we can cross—but with consequences.

As ever, these two conceptions do not exist in mutual exclusion from one another. The new environmental limits include the confines of space and the limits of production, but the ultimate consequences of overpopulation are expressed in an entirely new form as a result of the new environmental ontology. In the old conception, environmental limits were a glass ceiling that would stop us if we reached it. Those earlier Malthusians warned that if we did not take responsibility for population growth beforehand, then nature would

dispassionately and forcefully beat us back down to size. In the new conception, the environment is an intricate clockwork mechanism, with population pressure as its spring. The warning of environmental Malthusianism is that if we overwind the spring, the clock will lose time; if we overwind again, the cogs will eventually slip, and the clock will cease to keep time at all.

The practical upshot of environmental limits for both neo- and environmental Malthusians is captured in the concept of 'carrying capacity'. As is to be expected, the actual meaning of carrying capacity is affected by the ontological difference between the old and new conceptions of environment—which is to say it was once a purely spatial concern, but later took on an ecological character. Appearing in the early 19th century, the phrase 'carrying capacity' was initially applied to shipping, referring to the amount of cargo a particular ship could carry after fuel, crew, and ballast were taken into account. The metaphor was later extended to goods carried by cart, by beast, or by hand, and eventually to any 'thing' that carries any other thing—as a bee carries pollen, a river carries water, or the wind carries moisture. Its use to describe the capacity of a parcel of land to carry a particular species occurs at the end of the 19th century, as a way for livestock farmers to assess the productivity of their land. This was by no means the 'invention' of such assessments; merely the application of a new term to an existing form of knowledge (see Sayre, 2008, for a more exhaustive account of the term and its historical uses).

What makes carrying capacity in this context different from its nominative forebears, however, is the specific epistemic moment in which the term is applied. While authors such as Knibbs (1928) and his contemporaries used the term extensively in the neo-Malthusian sense, elsewhere the science of ecology was beginning to take shape, and the reciprocal relationships between organisms and their environments were coming into focus (Worster, 1994). Land was no longer a space occupied by a fixed number of animals, but a system in which numbers were relative to the geology, ecology, and stewardship of their environment. Carrying capacity was not simply a function of acreage and food; elements such as soil, water, plants, and other species conspired to affect it, producing and consuming resources, providing or stripping out nutrients, casting light and shade, draining or pooling water. If you change elements in the ecology of the land, the carrying capacity changes with it. Alongside the emergence of environmental Malthusianism, carrying capacity came to refer not only to the number of people that could be supported by the available resources, but also to the resilience of the ecosystem

under the pressure of population growth. Environmental limits came to consist of both the spatial limits of productive capacity—shared with the old environmental ontology—and the ecological limits of the Earth's systems.

4.2.3 Population irruption

'Irruption' is a term used by biologists to describe the process by which an abundance of food or other favourable conditions results in a sudden increase in population, which then depletes the food supply faster than it can be replenished, resulting in a sudden population collapse due to conflict and starvation. The concept is of course identical to the central problematic of Malthusianism, but has existed since before Malthus wrote his famous essay. As Malthus himself remarked in the preface to his second edition: "much more had been done than I had been aware of… so long ago as the times of Plato and Aristotle… by some of the French Economists, occasionally by Montesquieu, and, among our own writers, by Dr. Franklin, Sir James Stewart, Mr. Arthur Young, and Mr. Townsend" (taken from the third edition, 1826, pp. iv–v). The reason why Malthus' name stuck to the concept is unclear. It may just be an accident of history, or it may be the simple fact that Malthus used quantification and statistics instead of just outlining the basic mechanism. Malthus is actually famed for much more besides his essay on population; he was a talented mathematician, he tackled some of the early questions that would found the study of economics, and he held the world's first chair in political economy. Malthus did, in any case, take the issue of human population irruption and formulate it with such clarity and force that it now bears his name.

Jonsson (2013, ch. 8) examines one of the names on Malthus' list, the case of 'Mr. Townsend'—the Reverend Joseph Townsend—whose *A dissertation on the poor laws* (1786) contained a meditation on population irruption, involving a colony of goats deserted on a Pacific island. The goats, free of predators and with an abundance of food, quickly multiplied, filling the island and depleting the food supply. As the food diminished so too did the goat population, and as the food replenished itself so too did the goats. When dogs were introduced to the island, they entered a similar cycle, this time the goats serving as food for the dogs, the populations of each rising and falling in turn. Eventually, a kind of balance was struck, wherein only the nimblest of goats escaped the dogs' chase, and only the strongest of dogs survived the scarcity of meat. In Townsend's

analysis: "The weakest of both species were among the first to pay the debt of nature; the most active and vigorous preserved their lives" (*ibid.*, p. 45).

This, as Jonsson shrewdly observes, is the moment at which Townsend "turned from natural history to political economy" (2013, p. 188). Townsend's intention was not to trace the fortunes of goats; it was to set humanity within a framework of nature that favoured the strong, and which found mercy in the predation of the weak before natural 'checks' to population could mete out their misery *en masse*. The role of population irruption rests on this distinction. When applied to non-human nature, it is removed from the political contention that always surrounds Malthusianism, leaving it open to cold analysis and simplistic theorisation; when applied to humans, however, it is always contentious, divisive, and political.

Population irruption is, of course, subject to the same discontinuity that brought environmental Malthusianism into being. It is more subtle, however, because the concept was already somewhat 'ecological' to begin with. In Townsend's example, the introduction of new species to the landscape altered the balance between consumer and consumed, changes in population of one species had knock on effects to the populations of other species. However, Townsend still assumes the underlying rules of the old ontology of environment; his island is a space with fixed laws. The goats decimated the vegetation, but the vegetation always grew back; the goat population crashed, but always recovered; the introduction of new species altered the balance, but only within fixed bounds. Townsend's island was ecological in terms of the reciprocity between organisms, but the island would always find equilibrium no matter how extreme the swings. There was no question of the island ecology being permanently upset by the pressure of population; population would be kept in 'check' by the island's natural limits.

The use of elements of ecology can also be observed in the works of later neo-Malthusians. East (1923), for example, saw population as an environmental determinant that could improve or impair the balance: "social progress requires better breeding in the first instance, in order to raise the racial potentiality for accomplishment; it requires a voluntarily standardized population in the second instance, in order to retain an environment in which these potentialities can be realized" (*ibid.*, p. 303). But this form of neo-Malthusianism stops short of positioning ecological processes as the principle determinant of environmental conditions. Nature's boundaries are first fixed, and then the space is filled with variation and balance.

In the new environmental ontology, the concept of population irruption is transformed. The assumed collapse of the population is no longer a linear causal chain moving from abundance to growth to scarcity to collapse; it instead becomes a distributed causal network in which population 'pressure'—or in other words the activities of people and their impact of the environment—causes systemic failures in the ecosystem, resulting in unpredictable losses in productive capacity followed by the ecosystem's inability to recover or return to its previous state. The population irruption of this new environmental ontology is not simply about running out of food or space within which to multiply, it is the breaking of the life support system and the inability of populations to survive without it.

4.2.4 Ecology

The discontinuities observed in each of these elements—environment, environmental limits, and population irruption—are predicated on the emergence of an ecological understanding of the natural world. Ecology itself has a genealogy stretching back several centuries, and while the word 'ecology' was coined relatively recently (Haeckel, 1866), the area of study to which it initially referred—'the œconomy of nature'—goes back much further (Digby, Sir, 1645; Linnæus, 1762; see also Leshem, 2013, on oikonomia/œconomy/economy through the ages). There is a stark difference, however, between what was known as the œconomy of nature, and what we now think of as ecology. The old œconomy of nature was the study of biology and natural history in its entirety, with all of its taxonomies and interactions, but done so on the premise that nature's œconomy was God's estate, administered by him, toward his own ends. The œconomy of nature was assumed to be perfect by default, and humanity could but try to understand the great plan the lay beneath its apparent chaos. The new concept of ecology emerged in the early 20th century, and owes as much to the field of physics as it does to biology. This 'new ecology', as Worster (1994) terms it, conceptualises the natural world as a thermodynamic system, receiving energy from the Sun and distributing that energy through the food chain toward its inevitable entropic state. The history of environmental Malthusianism is not contained solely within the Malthusian literature, the birth of this new ecology was instrumental in the discourse that would characterise environmental Malthusianism's emergence.

Transeau (1926) is perhaps the earliest example of ecological systems being regarded as thermodynamic systems, which could be studied by the measurement of energy moving through them. Transeau's application of energy 'accounting' was, however, specific to one local ecosystem—a cornfield in northern Illinois—rather than an all-encompassing theory of the natural world. Elton (1927), in his book *Animal ecology*, gave a more general account of the process. Elton spoke of nutrients rather than energy, but the systemic concept was the same. He coined the term 'food chain' to describe the movement of energy through the system, allocating plants as 'producers', which turned sunlight and nutrients into food for animals who were 'consumers'—the first-order of consumers being herbivores, who in turn were eaten by the second-order of consumers, the carnivores. Elton's book was well received, capturing the movement of new scientific thought at the time; away from a religious or romantic idealism of nature, toward a mechanistic view of nature composed of immutable and universal concepts. Tansley (1935) sought to sever the science of ecology entirely from its romantic and spiritual past. He eschewed any notion that ecosystems were in any way synergistic, or that they were an irreducible whole which must be studied as one might study a single organism. Tansley insisted that there was always a mechanistic explanation for the operation of an ecosystem, and that any apparently synergistic effects were merely the result of associations between individual elements. For Tansley the 'basic units of nature' were constants which could be identified an analysed in a consistent way. Finally, Lindeman (1942), in his seminal paper *The trophic-dynamic aspect of ecology*, marks the full emergence of ecology in its new form. Lindemann brought mathematical rigour to the foundations laid by Transeau, Elton, and Tansley, providing a framework by which ecological systems could be quantified and evaluated using the same methodologies as any other 'hard' science. In this sense ecology was transformed into a form of knowledge that was not only interoperable with other quantitative forms of knowledge, but could lean on the prestige—and power—associated with 'genuine' scientific enquiry (see Worster, 1994, for an exhaustive account of this chain of events).

Parallel to the emergence of the new ecology—and seemingly independent of neo-Malthusianism—was the development of the concept of the 'biosphere' by Russian geochemist Vladimir Vernadsky (1998, originally published in Russian in 1929). Historians of science point to the biosphere as being one of the seminal concepts in the study of natural history (Margulis and Sagan, 2000; Pitt and Samson, 1999; Robin *et al.*, 2013). As Margulis and Sagan have it: "Vernadsky did for space what Darwin had done

for time: as Darwin showed all life descended from a remote ancestor, so Vernadsky showed all life inhabited a materially unified place, the biosphere. Life was a single entity, transforming to earthly matter the cosmic energies of the sun" (2000, p. 51). Vernadsky was remarkably prescient in his own appraisal of this new concept, arguing that the biosphere reveals a new evolutionary phase he labelled the 'noosphere', meaning the sphere of the mind or intellect. Through a causal chain beginning with human intellect and intention, the entire biological and geological structure of the Earth was being transformed. "The noosphere is a new geological phenomenon on our planet" notes Vernadsky, "for the first time man becomes a large-scale geological force" (1945, p. 9).

Via a different route, but to the same end, the biosphere and the new ecology provide a view of nature and the environment as a system, its elements interconnected and inseparable. They each force us to think globally[5] and to consider the interconnectedness of all life on Earth. Moreover, they present this knowledge in the form—and from a position—of scientific authority. No longer simply religious dogma or romantic idealism, the environment was now a quantifiable object, and thus amenable to both scientific method and governmental rationality.

The dates associated with the emergence of the new ecology overlap with those of the neo-Malthusian publications mentioned above, and pre-date the works of Osborn (1948) and Vogt (1948) by only a short time. In terms of their intellectual history there is a clear correlation between the two, but any inference of causation is less obvious. Worster (1994) makes a forceful argument to the effect that economics was the source of many of ecology's major concepts. For Worster: "The direction of that flow of ideas is all-important", he concludes, "it was ecology that applied economic thinking to the study of nature." (*ibid.*, p. 294). With the obvious caveat that 'economics' is also an evolving term with all the risk of anachronism that entails, it is safe to say that the relationship between ecology and economics was at the very least reciprocal, if not entirely one-sided (*cf.* Mirowski, 1994, for the converse borrowing of biological metaphors by economists).

This point is particularly salient in the case of early 20th century neo-Malthusianism, which was a forum shared by both economists and biologists. To its protagonists, knowledge about society took the form of statistics, both in terms of the biology of the human animal and the economics of human society. Of the figures

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[5] The 'global' was already firmly in place from the 16th century (Worster, 2016), and Malthus was thinking about political economy in global terms in the 19th century (Flew, 1970; Mayhew, 2014), but the global ecological ontology, and 'the' environment, are 20th century creations.

mentioned already, Malthus himself had sought to reconcile the measurement of human affairs with what he thought to be the essence of human motivation, and later statisticians such as Knibbs (1928) and Thompson (1915) continued his legacy with detailed studies on the economics of population. East (1923) and Pearl (1922) were biologists by trade, but sought to wield their biological knowledge to shape society as a whole. Pearl was better known for advancing the field of 'biometry'—the application of statistical methods to biological phenomena—than for his later Malthusian exploits (Kingsland, 1984), but East had a more singular purpose of modelling society around the insights of the biological sciences, his edited volume *Biology in human affairs* (1931) serving as something of a manifesto to that end. Both Pearl and East were dedicated eugenicists, seeking to 'improve' the human race though the application of biological knowledge— which was not an unusual position at the time—and both saw population growth as a thorn in the side of their eugenic ambitions.

At that particular conjuncture, the political project of neo-Malthusianism sat at the centre of an epistemological alliance between economics and human biology, with ideas—and methods—circulating between the two. In order for ecology to become visible to that epistemic community, it first had to undergo its translation into the language of statistics, to be accepted as a legitimate form of knowledge. Notwithstanding any contention over the flow of ideas being uni-directional, Worster's (1994) account is the most detailed and thorough treatment of the history of ecological thought available, and the process observed by Worster—the absorption of economic concepts into ecological science—is the manifestation of that translation. There is no reason to assume that this move was deliberate, ecologists were not necessarily trying to become useful to Malthusians, but the translation was an essential condition for the fusion of ecological knowledge with the governmental rationality of Malthusianism. Shortly afterwards, in Osborn (1948) and Vogt (1948), the ecological view of nature was integrated into Malthusian politics, and environmental Malthusianism was born.

There is a discrepancy of some two decades between the time historians of science place the appearance of ecological thought and where I and others place the emergence of environmental Malthusianism (*cf*. Margulis and Sagan, 2000; Pitt and Samson, 1999; Robertson, 2012; Worster, 1994). The publication of Elton's (1927) *Animal ecology* and Vernadsky's *The biosphere* (1998/1929) indicate the emergence of what we now think of as 'ecology' (Worster, 1994), and while it is not methodologically possible to infer the private beliefs of our neo-Malthusian authors from their writings alone (see Skinner,

2002, ch. 3), there are plausible reasons why Malthusian discourse took so long to absorb this ecological knowledge, even though Malthusianism was heavily implicated in other developments in biological knowledge from the outset.

There is some suggestion that it was simply due to the outbreak of World War II, when minds were elsewhere and resources tight. As noted by Luten (1978), above, neo-Malthusianism had been a thriving intellectual enterprise in both Britain and America, but after World War II British writing slowed to a standstill while its American counterpart increased with verve. Luten ascribes this to simple economics: "Perhaps it was an idea whose time had come; perhaps it reflected a realization of the enormous toll the war had taken of American resources; perhaps the ending of the Western frontier was sinking in. Europe, overwhelmed by the problems of reconstruction, was preoccupied. British writing by no means disappeared, but it was a trickle compared with the stream of American books." (*ibid.*, p. 70).

There are, however, other historical determinants, which could proffer a similarly robust explanation. In the 1920s it was still controversial to say that the natural world was anything other than God's perfect creation. Even when bickering over the exact process by which species came to be, it was still widely believed to be part of God's plan; infallible, eternal, perfect. Jonsson (2013, ch. 8) traces this thread through the 18th century when it was believed that the natural world had been designed in such a way that one species could never extirpate another; that predators were outnumbered by their prey, that grasses grew faster than ruminants could ruminate. As exceptions appeared to test this particular rule—invasive species decimating plantations in the colonies; the remains of extinct species being found at home—they were met with confusion as to why God had planned it that way, and prevarication over the limits of our understanding or veracity of the data. Such a powerful idea was that of God's infallibility that it was assumed to be humanity's shortcomings that distorted our view of nature, rather than a serious challenge to the teachings of the Church. While the neo-Malthusians spoke of nature rather than God, they spoke with an ecclesiastical reverence, deference, and fear. Nature's 'immutable laws' were analogous with God's design.

I would add a third suggestion of my own to those of Luten and Jonsson. The specific epistemic community of the 1920s within which environmental Malthusianism was brewing was both Malthusian and eugenic; it was biological and social scientific. Proponents thought that they could know the underlying structures and determinants of human societies by the application of scientific methods, and were confident in their

results. Eugenicists derided the 'environmentalists' who believed that one's environment—both social and natural—was the chief determinant of social outcomes such as poverty, criminality, illiteracy, and ill health. East (1923, p. 210) is particularly forthright on this aspect of the discourse, belittling these environmentalists and even repeating a claim that "50 to 75 per cent of the general death-rate is determined solely by the forces of heredity and is not susceptible to modification by any measures of sanitation or preventive medicine". The dichotomy between environment and heredity in social determinism was central to the eugenicists' argument, and it was in their best interests to downplay the importance of environmental factors. Thus, where discussing the effects of environment, neo-Malthusian eugenicists merely stated that our environment sets upper limits on the potential of humanity as a whole, but did not determine individual potential, which was hereditary. At all times they steered the debate away from any close analysis of environment, or reconceptualisation beyond that of material limits. In this way, the politics of eugenicist discourse impeded the uptake of a more sophisticated understanding of the environment, which was not realised until Vogt's (1948) contribution. Neo-Malthusian writings of the 1920s actually contained many of the ingredients of an ecological understanding of the environment, but they did not take the leap; it did not form part of their discourse.

The emergence of environmental Malthusianism is inextricably linked with the emergence of ecology. With the singular notion of the biosphere came a singular notion of the environment; with the interconnection and reciprocity of the global ecosystem came humanity's 'relationship' with nature. This knowledge did not remain esoteric, the discourse of ecology entered the field of government and became the principle means by which to conceptualise the environment and problematise our impact upon it. Whether, as Worster (1994) suggests, ecologists aped economists to bring biology into the mainstay of human affairs, or whether those who would govern sought the legitimacy of nature and science to bolster their politics, the outcome is the same: ecology and government became entwined. Whether to preserve the flow of industrial resources, or just to conserve nature for its own sake, the politics of ecology came down to one simple statement repeated with great regularity and in many permutations: "There would seem to be no real hope for the future unless we are prepared to accept the concept that man, like all other living things, is a part of one great biological scheme" (Osborn, Jr., 1948, p. 172).

The role of ecology was not confined to the Malthusian project. The dawning realisation of nature's mechanisms strongly inflected the nascent programme of global

governance instigated after World War II. Nowhere is this more evident than in the 1955 symposium titled Man's role in changing the face of the Earth (Thomas, 1956). Seventy scholars from every formal discipline met to discuss the implications of humanity's impacts on the environment. The ecological view of nature was taken as read and the symposium—thought by some to mark the beginning of the modern environmental movement (Robertson, 2012, p. 74)—was convened with the explicit intention of provoking a policy response; a pattern which was to be repeated over and over again in international scientific and intergovernmental fora. A product of the discourse of ecology, environmental Malthusianism superseded its neo-Malthusian forebear and was fully absorbed into governmental rationality: national, international, and global. The emergence of environmental Malthusianism was complete.

5

The discourse of environmental Malthusianism

In this chapter, I consider the discourse of environmental Malthusianism, highlighting the disagreements that occur within the discursive formation. From this I distinguish a second-generation environmental Malthusianism, the proponents of which sought to drive a wedge between themselves and their predecessors in an attempt to shake off Malthusianism's eugenicist past. I then introduce a third-generation environmental Malthusianism, rising from the ashes after Malthusianism's fall from grace. This new generation has reinvented itself in the face of multiple criticisms regarding race, class, and gender inequalities, but has never regained the prominence or dominance that its predecessors enjoyed. Most strikingly, third-generation environmental Malthusianism took onboard the basic tenets of what would eventually become known as the 'Cairo consensus'—that population growth is an effect of social ills, not the cause—and began focussing on the spread of rights for women and girls as the primary means of ending population growth. In this sense, the *rise of feminism* became an unlikely determinant in the development of environmentalist thought.

5.1   The discursive formation

5.1.1   Eugenics

Immediately preceding the emergence of environmental Malthusianism, neo-Malthusian discourse was in lockstep with the discourse of eugenics—an entirely unremarkable position at the time—but while eugenics is more directly associated with those neo-Malthusians of the early 20th century, it was still an important feature of environmental

Malthusian discourse. With the emergence of environmental Malthusianism, what changed was the concept of the environment and the ecological understanding of nature; all other elements associated with neo-Malthusianism remained intact, including its attachment to eugenics. In environmental Malthusianism this was expressed as an unabashed biological elitism, wherein those considered to be of inferior genetic heritage were to blame for both population growth and environmental degradation. As such, the targets of eugenic selection were also the initial targets of environmental Malthusianism's political designs. That said, the eugenic discourse was never an uncontentious element of environmental Malthusianism. From the very beginning, its two initial proponents, Fairfield Osborn Jr. (1948) and William Vogt (1948), were split on the issue; Vogt being a forthright eugenicist, but Osborn having his doubts. In this way the contention over eugenics was itself a formative aspect of environmental Malthusian discourse.

The combination of eugenic and Malthusian discourse created a problematic dyad between 'quality of people' and 'quantity of people'. From the eugenic viewpoint, ever growing numbers of people made it increasingly difficult to control the genetic quality of the species; in the Malthusian view, the irresponsibility of those from low quality genetic stock made it all but impossible to instigate non-coercive measures of population control. This was the intellectual context into which the environmental problematic entered. The first concern of earlier neo-Malthusian eugenicists regarding the environment had been how to maintain an environment conducive to the 'improvement' of human genetic stock. They were concerned that overpopulation among undesirables would make it impossible to maintain such an environment; partly because of the misery that would follow Malthusian 'checks' to population numbers, but also because of the additional burden placed on space and resources, which they believed could be put to better use. This, of course, exhibits the pre-ecological understanding of environment—our environment which shapes us; a space that we will eventually fill. It was only after the emergence of environmental Malthusianism that eugenicists began to blame people whom they considered to be inferior for exacerbating the newly conceptualised ecological environmental problems. To the Malthusian-eugenicist, people of low genetic quality placed an excess burden on the environment, making it more difficult to provide a better quality of life for the 'deserving'; to the eugenic-Malthusian, people of low genetic quality were incapable of controlling their own numbers, placing ever more pressure on a struggling environment. The eugenic problem of quality, combined with the Malthusian

problem of quantity, was extrapolated to the new problem of the environment, forming the prototypic environmental Malthusian discourse.

The eugenic form of environmental Malthusianism did not dominate for long. In the immediate aftermath of World War II, eugenic discourse fell out of favour. I shall develop this observation in more detail below, but for the moment it is sufficient to say that a new generation of environmentalists sought to claim the Malthusian problematic for their own cause, while at the same time distancing themselves from any form of biological elitism—racist, classist, sexist or otherwise. They were forced to craft their discourse in direct opposition to eugenics, but in the very act of opposing it, environmental Malthusianism was being shaped by its eugenic past. The discourse of eugenics did not disappear completely, but would become a subjugated discourse; a taboo, unacceptable in open speech. The non-discursive practices associated with eugenics however—of the institutions, authorities, funding bodies, and individuals invested in neo-Malthusianism and eugenics—did not vanish overnight, and the new environmental Malthusianism could not immediately shake off its eugenic heritage (for a more detailed discussion of this point, see Greene, 1999, on the 'population apparatus'). To its critics, the environmental movement would remain associated with eugenics for many years to come.

5.1.2 Quality of life

Classical and neo-Malthusianism both stem from a concern for quality of life, built on the basic premise that the more people there are, the less stuff there is to go around. The limits of food production, or any other resource, would only become a problem if they began to impinge upon the health and well-being of people. While resource shortages would first affect the poor and the vulnerable, the logical conclusion of the Malthusian problem was that it would eventually extend to all people, with misery stemming not only from the shortage of resources themselves, but from the conflict that inevitably accompanies such scarcity. With the emergence of environmental Malthusianism, the finitude of resources continued to pose a threat to quality of life, but now with the added dimension that it was not only material and spatial limits, but also ecological limits—and the concomitant changes in environmental conditions—that would foster human misery.

Within this discourse on quality of life there is a diversity of opinion about who should be blamed and what should be done. The initial problematisation was founded on

the eugenic principle of biological elitism, the result being that the chief goal of any intervention should be to sustain a high quality of life for people of a particular genetic heritage or with particular genetic characteristics. Anyone who fell outside the eugenic purview was a burden, and would only serve to reduce quality of life for those deemed deserving. The eugenic view was contested on the principle of biological universalism. In a general sense, this meant that all races and creeds shared equal rights—and equal blame—regardless of their genetic characteristics, and so interventions should be sought to bring a greater quality of life to all. In the specific case of environmental Malthusianism, however, biological universalism led to a statement of differentiated responsibility in the opposite direction: the rich and profligate members of the middle classes in the developed world—hitherto the darlings of eugenic discourse—were responsible for a disproportionately heavy impact on the environment, and were thus the rightful targets of any intervention. Unsurprisingly this discursive dart did not fly unhindered. Even now, with the discourse of biological elitism having long since fallen into disrepute, the contention over how much responsibility should be borne by the beneficiaries of historical environmental damage endures. As an imminent threat to the wealth and power of the industrialised world, this is one debate that can hobble along perfectly well without the crutch of biological elitism.

Throughout the rise and fall of each biological 'ism', the quality of life discourse has continuously oscillated between the dyad of 'maintaining wealth' and 'distributing wealth'. For Malthusians of every hue, the root of the problem was that wealth was finite and its distribution spread too thinly; to maintain wealth required a reduction in population, so as to mitigate the deleterious effects of distribution. When ground through the mill of biological elitism, wealth was a product of good genetic stock, and its uneven distribution a natural outcome of inherited capability. In contrast, biological universalism breaks the link between an individual's genetic heritage and their value to the species; it shifts the parameters of the debate away from one's value as an economic agent, to an inherent, unquantifiable value, wherein one human being is equal to another regardless of their capabilities. Biological universalism is, of course, a double-edged sword: equal stature means equal responsibility, and even if biology is rejected as the basis on which wealth should be distributed, there are many more ways for inequality to perpetuate. But regardless of what counts as wealth, where it comes from, how much there is, and how or with whom it should be shared, the one constant that survives the discourse on quality of

life is the dyad of maintenance and distribution of wealth, which environmental Malthusianism has at the heart of its problematisation[6].

5.1.3 Environmental Limits

Prior to the emergence of environmental Malthusianism, environmental limits had been conceptualised as limits of physical space and productive capacity—which is to say, there was only enough arable land, only enough clean water, only enough industrial material to support a certain number of people at any given time. The consequence of bumping up against these limits was to be pushed back, to be enclosed and constrained by natural 'checks' to population growth. Environmental Malthusianism is itself the product of a new discourse on environmental limits. Not just physical space and productive capacity, but an ecological system with inputs, outputs, and variables; not the sort of limits that one could bump up against and be pushed back by, but limits in the form of systemic resilience, a system upon which a population puts 'pressure'. The consequence of putting too much pressure on the system—of having too high a population—is systemic failure. Not simply population collapse within a fixed environment, but ecological collapse, resulting in population collapse, and an environment forever changed.

In the ecological permutation of Malthusian discourse, population was already too high, so that if quality of life were to be increased for everyone the environment would quickly become ruined, and if the environment were ruined it would ultimately reduce quality of life for everyone. This mirrored classical Malthusianism in the sense that, even though the effects of overpopulation may begin locally with specific populations, they would eventually affect everyone globally, but now the vector of the problem was systemic and ecological, rather than linear and spatial. To environmental Malthusianism, environmental limits had already been transgressed, it was only the systemic nature of the problem that created a delay between cause and effect. Unlike the earlier Malthusian 'checks', which would begin to bite as soon as the food ran out, environmental Malthusianism rested on abstract reasoning, which required faith in scientific knowledge about the workings of the planet. The threat could not be 'seen' with the naked eye, only with instruments, calculations and theories—a drawback that would beleaguer

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[6] This point is of great importance in relation to the genealogy of sustainability as a whole, more so than would appear from this context. See the narrative *political impossibility*, in chapter 2 (§ 2.1.3), for details of the conflict it provoked and its legacy in sustainable development.

environmental knowledge of every sort from then on. This was a new kind of problematisation, to which uncertainty and doubt were intrinsic.

As a new generation of environmental Malthusians took control of the discourse, the eugenic undertones of environmentalism were all but expunged. This new environmentalism espoused biological universalism—just as likely to place the blame on rich as on poor, on white as on black, on men as on women. Stripped of the baggage of biological elitism, the discourse of environmental Malthusianism became a species-wide, bio-political equation, based not on the class of the individual, but on the category of 'human' and the impacts of the human species as a singular entity; shared rights, shared responsibilities, and shared consequences. The problematisation at the heart of this next-generation environmental Malthusianism was balanced between the Malthusian first principle that the more people there are, the less stuff there is to go around; and an ecological understanding of the environment in which people exert 'pressure' on an already over-stretched planet. This is the dominant discourse into which environmental Malthusianism would settle.

5.1.4   Disagreements within the discourse: biological elitism

It is clear that the discourse of environmental Malthusianism was not a harmonious choir of consensus and constructive criticism. Within the ecological bounds of truth set out on environment, limits, and population, debates arising from the internal politics of Malthus' latest incarnation abound. The discourse of environmental Malthusianism contains within it conflicting normative views on the acceptability of certain practices related to population control and disputes over the centre of the problem, but the disagreements still take place within a single discursive formation, marked by a set of shared truths and assumptions about the reality of the problem. In this respect, the differences occur on points of normativity rather than points of fact. At no stage do any of the arguments stray from the basic premises of Malthusian thought—that more people means less stuff, that this is a problem, and that something must be done—nor from the basic ecological ontology that underpins the new concept of the environment. The discourse of environmental Malthusianism did, however, continue to develop. Its attachment to eugenics, in particular, caused a rift within the discourse, and ultimately an alteration to the discursive formation. Though based around one small point of contention, the shift would in fact turn out to be momentous.

The point of contention within the discursive formation—the one which illuminates the development of environmental Malthusianism beyond its emergence—is what I am calling 'biological elitism'. This covers a multitude of sins, including racism, sexism, and classism—all of which having been integral to Malthusian thought at some point, chiefly due to a belief in the merits of eugenics. In the decades leading up to the emergence of environmental Malthusianism, eugenic discourse itself was split between those who assumed that rich white men—for the simple reason that they had already achieved a dominant social position—were biologically superior; versus those who believed that the scientific method would determine who was superior, in what way, and to what end. Raymond Pearl (1927), whose work was a precursor to environmental Malthusianism, had railed against the specious arguments of white supremacy, but was still a forthright eugenicist. In contrast, Pearl's contemporary, Edward Murray East, was unflinching in his white supremacy, believing that "heredity and environment combine to render black-brown threats powerless" (1923, p. 120). Later, Fairfield Osborn Jr. (1948), author of the first fully formed example of environmental Malthusianism, had rejected the basic premise of white supremacy, while still conceding some of the broader principles of eugenics. Whereas Osborn's counterpart, William Vogt, would have preferred not to support 'hordes' of 'indigents', who "by both genetic and social inheritance, would tend to perpetuate the fecklessness" (1948, p. 283). Each of these proponents held their own views on the place of racism within scientific debate, but they all stuck to the principle that some individuals, by dint of their genetic makeup, were inherently superior to others, and that our political structures should be arranged around the hierarchies implicit in those judgements. In other words, they still maintained the legitimacy of biological elitism.

While this split within eugenic discourse would be carried through, it was the rejection of biological elitism entirely that would come to define a new generation of environmental Malthusians. In this sense, the time and place of environmental Malthusianism's emergence is all important. As noted by Luten (1978), the wave of neo-Malthusianism fostered in Britain in the lead up to World War II had petered out in the War's aftermath. As a burgeoning discourse on the American intellectual scene, environmental Malthusianism was caught between the environmental, civil rights, and feminist movements. A new generation of young people were growing up to meet head on the twin outrages of environmental destruction and social injustice; to those concerned,

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there was no place for an unjust environmentalism, and the biological elitism inherited from eugenics was rejected on that basis.

It was by no means a clean break. Conflation between Malthusianism and eugenics—including the supremacy of 'developed' populations over developing ones—was [is] commonplace. One of the enduring figureheads of environmental Malthusianism, Garret Hardin, was staunchly eugenicist, with derisory attitudes toward developing populations (1974) and women (1970); (a scathing polemic against Hardin can be found in Chase, 1975). In contrast, Paul Ehrlich, another doyen of environmental Malthusianism, marched in support of the civil rights movement. He sought to draw attention to the fact that it is developed populations who are responsible for environmental destruction—past and present—and that population control should be seen as a way by which the fruits of industrial progress can be enjoyed by all (Ehrlich and Ehrlich, 1971). But, despite the irreconcilable nature of these normative disagreements, they occur entirely within the discourse of environmental Malthusianism, adhering to the ecological bounds of truth set out on environment, limits, and irruption, and the Malthusian problematisation that more people means less stuff, this is a problem, and something must be done.

5.2   Second-generation environmental Malthusianism

The discontinuity between biological elitism and biological universalism was momentous for the discourse of environmental Malthusianism. It led to the re-invention of environmental Malthusianism along ostensibly progressive lines, resulting in the version most readily associated with the modern environmental movement. While the initial emergence of environmental Malthusianism had been steeped in the politics of eugenics and elitism, this second-generation environmental Malthusianism sought to place all of humanity on an equal footing; it lost the air of technical, mechanistic problematisation evinced by neo-Malthusian statisticians, and substituted a radical, existential problematisation that demanded revolutionary social and economic transformation; it lost the unwavering supremacism of the eugenicists, and substituted a horrified, self-flagellation that could only be purged in 'a fierce green fire' (Shabecoff, 2003). Coinciding with the ascent of the modern environmental movement in the latter half of the 1960s, and running through to the decline of environmental Malthusianism toward

the end of the 1970s, this particular phase in the history of environmentalist thought has been covered extensively in the literature (see in particular Adams, 2009; Bernstein, 2001; Dryzek, 2005; Robertson, 2012, but there are many more). I do not wish to reproduce too much of that work here, but I will provide enough to continue the historiographical narrative and give context to the insights presented.

As ever, the appearance of this new, second-generation turn of the discourse did not spell the end of its predecessor—the change is not from existence to non-existence; it is from dominance to subjugation, from mainstream to the fringe. Biological elitism remained alive and well, circulating as it previously had though the corridors of power and scholarship, and in the minds of those who had embraced eugenic discourse at its zenith. The difference was generational in both the literal and figurative sense; it was a younger generation who ushered in a second-generation environmental Malthusianism. Nowhere is this more striking than in the twin voices of Garret Hardin and Paul Ehrlich. To the reader who seeks out the intellectual history of sustainability, it can appear at first as though Hardin and Ehrlich were cut from the same cloth. They were both prominent and outspoken environmental Malthusians, both biologists. Their names appear so often on the same page that it is easy to mistake them for a team, working together in common cause. But when viewed through the lens of biological elitism, the pair are at opposite ends of the spectrum.

5.2.1   First-generation continuity: Garret Hardin

Garret Hardin was a biologist and environmentalist; a Malthusian and eugenicist. Denizen of the first generation of environmental Malthusians. Much has been made of Hardin's well-known *Tragedy of the commons* thought experiment (1968)—a piece both famous and infamous in equal measure; proven and disproven *ad infinitum* (for various analyses, see Dahlman, 1991; Ostrom *et al.*, 2002)—but chiefly, Hardin had intended it to be a clarion call to population control. The purpose of Hardin's tragedy was to demonstrate the logical incompatibility between individual freedom and environmental limits. It was a variation on the 'prisoner's dilemma': if individuals cooperated with one another they could guarantee a shared benefit for all, but if each individual pursued their own course, they stood to win a greater share for themselves—to the detriment of everyone else. Hardin used the metaphor of cattle grazing a shared field: if the farmer grazed an extra cow, he would receive a greater income, but if all of the farmers followed suit, the field

would become over-grazed and everyone would lose out, but in the absence of controls or incentives to counteract, the farmers would still choose to over-graze—such was the perverse incentive of the prisoner's dilemma. For Hardin, the practical upshot of this was that self-interest outweighed community spirit, and as such, a finite environment would always be a space for competition rather than cooperation.

The facticity of Hardin's account in real-world settings has been thoroughly critiqued, complicated, and in some respects debunked (notably by Ostrom, 1990), but there is still value in using Hardin's discursive practice as a means to understand the construction of environmental Malthusianism. Hardin was not merely making an economic calculation between the availability of resources and the number of consumers. Hardin's world-view was derived from his own discipline of biology—or at least the version of biology that dominated the first half of the 20th century—and his eugenic politics were rooted in this same science (Chase, 1975, engages in a lengthy tirade against Hardin, accusing him of scientific racism, and dissecting his biology textbook over two editions, highlighting Hardin's steadfast refusal to give up his eugenicism, even in the face of mounting evidence to the contrary). Hardin's eugenic politics percolated through the rest of his thought. He viewed the human species as a biologically predetermined hierarchy, established not by historical violence or unearned privilege, but by genetic heritage, which separated the 'feeble-minded' and 'subnormal' from their biological superiors (1949, ch. XL; 1952, ch. 38). This biological-hierarchical view of human society bled into Hardin's environmental Malthusianism. In terms of taking responsibility for population numbers, Hardin's feeble-minded and subnormal cohort could not be trusted to do the right thing, so must be forcibly sterilised to prevent pollution of both the gene pool and the planet (*ibid.*).

Hardin's biological elitism extended to his reasoning on so-called 'lifeboat ethics' (1974). Imagining rich countries as lifeboats, and poor countries as drowning people, Hardin invites us to consider the consequences of foreign aid. With limited space and resources, any attempt to bring everyone aboard the lifeboats would result in the suffering, starvation, or capsizing of all. Only a policy of non-admittance would keep the lifeboats afloat. Hardin's over-riding elitism prevented him from integrating the obvious point that it is the rich countries—the lifeboats—who are the cause of the environmental problem, and so killing off the poor would not constitute a solution. Instead we are left to infer that, in the absence of the drowning masses, the rich world would have the breathing space

and cumulative intellect to bring about solutions at a later date, unhindered by the demands of developing populations.

Hardin's biological world-view also extends to the innate desires of women, leading him to build an argument for state sanctioned population control on the basis that "women want more children than the community needs" (1970, p. 427; repeated in 1993, p. 258), and therefore cannot be trusted to make responsible decisions about reproduction. Hardin argued that the state should have the right to intervene, either through incentive or coercion, if it deems a woman to be at risk of having too many children. In each of these examples, Hardin constructs an argument predicated upon a biological view of the human species, with hierarchy intrinsic to it, causing his logical deductions and political musings to exhibit an unmistakable biological elitism.

I raise these points only to show the effects that a biologically elitist world-view has on the problematisation of population through the lens of environmentalism. As we shall see in the example of Paul and Anne Ehrlich, these conclusions are not inevitable, and a radically different outcome can derive from a biologically universalist starting point. Hardin is only one example of many, and I focus on his work merely as being representative of how the discourse functions (see Greene, 1999; Robertson, 2012 for a long list of others, as well as Chase, 1975 for a polemical treatment). To avoid any inference of an *ad hominem* sleight against Hardin, it is worth pointing out that, in the last edition of his biology textbook (Hardin and Bajema, 1978), he removed most traces of eugenic politics, focussing instead on the biology of heredity in all species, and changed the subtitle from 'human implications' to 'principles and implications'—shedding its manifestly political connotations. Furthermore, in one of his last books, *Living within limits* (1993), Hardin also expunged most elements of biological elitism, while still presenting a forceful argument for population control. Whether these examples represent a change of belief on Hardin's part, or just the commercial imperatives of publishing in a new context, we cannot tell from the text alone. Either way, Hardin's discursive practice tracks the fall of eugenic politics and the subjugation of biological elitism into the 1970s, and marks the rise of the second-generation of environmental Malthusianism. It is the journey of the discourse—not Hardin himself—that is of note to this analysis.

5.2.2 Second-generation discontinuity: The Ehrlichs

Paul Ehrlich is a biologist and environmentalist; also a Malthusian—but not a eugenicist. The epitome of second-generation environmental Malthusianism. In the late 1960s, Ehrlich became a household name across the English-speaking world, following the publication of his bestselling book *The population bomb* (1968). The book, as with most of Ehrlichs writings on environmental Malthusianism, was in fact co-authored along with his wife, Anne Ehrlich—her omission from the copyright being at the insistence of the publisher (Ehrlich and Ehrlich, 2009). As the public face of the duo, Paul Ehrlich made numerous appearances on television, radio, and in print, drawing attention to the population problem and its environmental consequences, making him something of a figurehead for the environmental movement throughout the 1970s (Robertson, 2012). Most of the arguments put forward in *The population bomb* were a continuation of existing neo- and environmental Malthusian discourse around population growth and resource scarcity, incorporating the ecological understanding of the environment and its limits. Even the title was borrowed, again at the insistence of the publisher, from an earlier pamphlet on the subject (Moore, 1954). But it is not the similarity with earlier Malthusian discourse that is of note; it is the difference, and the fundamental difference between the Ehrlichs and the old guard is the rejection of biological elitism.

Before his foray into environmental Malthusianism, Paul Ehrlich was already a respected entomologist, specialising in Lepidoptera. He was also an outspoken anti-racist. In the 1950s, while still a student, Ehrlich had helped organise a protest against the maltreatment of a visiting scientist, whom had been refused service at a restaurant because of the colour of his skin (Sabin, 2013, p. 58). In 1964—four years before the publication of *The population bomb*—Ehrlich co-authored a chapter arguing that there is no biological scientific basis for social divisions based on race (Ehrlich and Holm, 1964). Both Paul and Anne Ehrlich continued their universalist activism well into their Malthusian turn, publishing a statement against the misapprehension that it was only 'other people's populations' that needed controlling (Ehrlich and Ehrlich, 1971), a book debunking myths about race and intelligence (Ehrlich and Feldman, 1977), and another—somewhat doomed—attempt to dispel racist and xenophobic myths about immigration (Ehrlich *et al.*, 1979). This is not to say that the Ehrlichs were enamoured of all humanity, they were scathing and derisive toward those they deemed to be 'irresponsible' or 'ignorant' of ecological consequence (1971, pp. 93–94), but their normative judgement

was not based on heredity, it was based on individual actions. The Ehrlichs, like so many of their generation, arrived with a biologically universalist world-view, before adapting and repurposing environmental Malthusianism to suit.

The impact of the Ehrlichs' activism on environmental Malthusianism—and environmentalism more broadly—was considerable. The American environmental movement of the 1970s was seized by Malthusian doctrine, and the Ehrlichs were at the vanguard. The eugenic discourse with which environmental Malthusianism had once been so intimately entwined was quickly falling into obscurity. Even those who had once openly championed a eugenic 'double dividend' to population control were forced either to speak from the fringes or to quietly omit their antiquated beliefs—exemplified in the case of Garrett Hardin, above. The Ehrlichs do, in fact, refer to Hardin on points of fact, using Hardin's published works as evidence to support their own arguments (*ibid.*, p. 6), but they do not address Hardin directly on the matter of biological elitism, instead lacing their own arguments with a normative position on justice for the developing world and race-equality at home, and distancing themselves from Hardin's position without recourse to *ad hominem* (*cf. ibid.*, pp. 54–55). Hardin, too, refers to Paul Ehrlich, praising his decision to publicly break the taboo of sterilisation (Hardin, 1970), and on many other points throughout his later writings (see Hardin, 1993). However, their interactions function in the capacity of mutual benefit, all the while maintaining a professional distance.

Much has been written about this moment in the history of environmentalism (see Robertson, 2012 for a comprehensive account of the movement in general; Sabin, 2013 for the Ehrlichs specifically), and I have no wish to repeat the copious detail of it here. Rather, I shall remain focussed on the discontinuity of biological elitism, which marks out second-generation environmental Malthusian as a distinct strain of the discourse, and the various effects of that specific discursive practice as it interacted with the political context of 1970s America.

Despite the best efforts of its proponents, second-generation environmental Malthusianism could never really escape the gravity of biological elitism. Advocates of population control—regardless of their motivations—were at permanent loggerheads with other advocacy groups, and the Ehrlichs became a lightning rod for criticism. Concerns about the racist, classist, and sexist undertones of environmental Malthusianism were well founded—as set out in the genealogy above—so it could never be a case of simply denying the existence of eugenic schemes. Instead, the Ehrlichs tried to engage in

the convoluted process of unravelling twenty years of eugenic Malthusianism, but what they proposed to replace it with seemed, on the surface, to be remarkably similar to what had gone before. Successive waves of Malthusian policies in 1950s and 1960s America had disproportionately affected low-income single black women—and every intersectional variant therein (Greene, 1999). Even when ostensibly neutral in their application, the outcomes were invariably racist, classist, and sexist. In this political context, second-generation environmental Malthusianism failed to break free from the yoke of biological elitism, and steadily collected opponents from the civil rights, trade union, and feminist movements with which it might otherwise have aligned (Robertson, 2012; Sabin, 2013).

The difficult birth of second-generation environmental Malthusianism followed a haphazard pattern: when the call was for population control in the developing world, the response was criticism for its neo-colonial, elitist, and *de facto* racist implications; when it was adapted to promote population control at home, the fear was of a eugenic plot to sterilise the poor; when the plan was to sterilise the rich, the charge was of threatening freedom itself. At one point the Ehrlichs found themselves embroiled in an anti-immigration row. In what was intended to be a neutral attempt to reduce population density by reducing immigration, the Ehrlichs found themselves standing shoulder to shoulder with far-right, nationalist, and xenophobic groups (*ibid.*). In order to distance themselves from such company, the Ehrlichs co-authored a book on the virtues of immigrants and the possibility of an immigration/population problematic that was not founded on bigotry (Ehrlich *et al.*, 1979), but there was little appetite for such a sermon beyond the choir.

In their writings, the Ehrlichs had trouble reconciling population control with progressive politics, because the populations that would ultimately be controlled were always disproportionately from a poor, vulnerable, or historically oppressed sections of society. This was not by design; it was a simple function of the way power operates. Those in a position to exercise or resist power can insulate themselves from the effects of government; those in a disempowered position cannot. Second-generation environmental Malthusianism did not intend to inflict regressive practices on the world, but a lack of appreciation for the causes and effects of inequality made such regress inevitable.

Where their neo-Malthusian and eugenicist predecessors had achieved political success, second-generation environmental Malthusians were met only with resistance—from oppressed groups who stood in solidarity against a familiar foe, and from non-

oppressed groups who saw a threat to their way of life. This point is often lost in accounts which consider Malthusian politics as a single object of analysis (such as Chase, 1975; Connelly, 2008; Greene, 1999). When taken together, the political successes of Malthusianism throughout the 20th century can make it seem as though environmental Malthusianism was a powerful political force. Additional conflation with the environmental movement more broadly (as with Greene, 1999; Robertson, 2012) can further add to the illusion that environmental Malthusianism achieved political success, with laws changed, watchdogs established, and regulations enforced. But the Malthusian policies actually put into practice were done so under a neo-Malthusian rubric: targeted at the poor, for the purpose of mitigating the social effects of overpopulation, and using knowledge and expertise from the social, economic, and medical sciences. The environmental aspect of Malthusianism served only as an additional argument to bolster what were essentially neo-Malthusian policies. Environmental regulations and environmentally friendly practices were directed at pollution abatement and technological development; not population control. The second-generation Malthusian plan to target the rich, based on knowledge from the environmental sciences, was never mobilised beyond the free choices of individuals who subscribed to the doctrine. Writers such as Chase (1975) have argued that environmentalists were complicit in the 'scientific racism' of neo-Malthusianism, but the case of the Ehrlichs clearly delimits an attempt to break free from biological elitism, and to separate the population problem from its elitist past. The fact that they failed to do so in any practical sense does not make them 'complicit'; merely unsuccessful.

What the proponents of second-generation environmental Malthusianism failed to grasp, most of all, was what Greene (1999) refers to as 'the population apparatus'—the vast amounts of funding, infrastructure, and practices built up over many decades; a *dispositif* designed to plan and mobilise neo-Malthusian projects with both governmental and non-governmental organisations, cutting across borders, languages, and cultures. Despite their wish to break free from the principle of biological elitism, second-generation environmental Malthusians were already caught up in a well-established movement consisting of thousands of people; experts and activists, politicians and philanthropists, volunteers and private citizens. They occupied offices and meeting rooms, field clinics and advice centres. They spread literature and media, doctrine and dogma. The networks were vast and international, consisting of people whom had never met one another, nor even knew of each other's existence. Just because the second-generation environmental

Malthusians wished to change the normative centre of the population apparatus, did not mean that any other part of the *dispositif* would follow. The population apparatus was a many-headed hydra, but the Ehrlichs were no Heracles. As much as they tried to fight it, the Ehrlichs only made it stronger by promoting the cause of population control.

While the Ehrlichs were at pains to project a sense of intrinsic equality across the human species—a post-race, post-class palimpsest upon which to inscribe a new calculation of the Earth's carrying capacity—it was a somewhat ill-fated ambition. The real-world context and historical conjuncture at which the Ehrlichs wrote meant that it was necessarily non-white and under-developed populations who fell foul of their tally. The victims of historical oppression, racism, or even just circumstance, would remain victims by the Ehrlichs' reckoning.

The point I wish to bring to bear, however, is that the inequitable consequences of their philosophy and activism was seemingly unintentional; the clear intention of their discursive practice—most explicitly in their writings on race and immigration, but implicit throughout their work (Ehrlich *et al.*, 1979; Ehrlich and Feldman, 1977)—was to place the argument upon a foundation of biological universalism. After second-generation environmental Malthusianism took its place as the dominant mode of the discourse, the mistakes and contradictions in the Ehrlichs' reasoning would be gradually hammered out by successive waves of thinkers and activists, so while some sections of the Ehrlichs' argument do not reach the normative bar they set for themselves, it would be wrong to place them in the same category as Hardin; as a biological elitist, eugenicist, or even scientific racist, as others have (*cf.* Chase, 1975, pp. 397–405). Rather, the Ehrlichs present the rocky beginnings of a re-invented discourse, still hooked in to some of the older tropes of its predecessor; not quite fully internally coherent in its initial form, but set along a trajectory that would result in the eventual disavowal of its discursive forebear. The Ehrlichs were, and are, not racist; the worst one could accuse them of is political *naiveté*.

5.3   Re-[re-]invention: third-generation environmental Malthusianism

As a *coda* to the analysis of environmental Malthusianism, it seems appropriate to mention its trajectory beyond its decline, and into the era of ecological modernisation that

dominated thereafter. As others have noted, Malthusianism did not simply vanish (Greene, 1999; Halfon, 2007). The vast, international Malthusian *dispositif* built up over the years was not attached to any particular state government or intergovernmental organisation, thus the *political will* of the American government and *political impossibility* at the United Nations did not shut down Malthusian thought; they merely forced it to adapt. An analysis of environmental Malthusian discourse beyond the 1980s reveals yet another re-invention in response to the changing normative context, resulting in a third-generation environmental Malthusianism. This time it was not a new generation in the literal sense; it was the same protagonists—chief among them the Ehrlichs—who remade themselves in the image of their interlocuters (Ehrlich *et al.*, 1995). Galvanised by various political defeats throughout the 1970s, environmental Malthusianism would this time attach itself to the consensus view, transcending the futility and inertia of being on the radical side of politics, and engaging fully with what would eventually become known as 'the Cairo consensus'.

The Cairo consensus was the outcome of the International Conference on Population and Development, held in Cairo in 1994 (UNICPD, 1995). The Cairo consensus turns conventional Malthusian wisdom on its head, stating that population growth is not the *cause* of poverty, disease, and conflict, but in fact population growth is an *effect* of those social ills. Incorporating research in demography, sociology, and international development, the consensus holds that poverty incentivises large families, because more hands do more work, increasing the quality of life. The threat of disease and lack of adequate healthcare increases infant mortality, necessitating large families to offset the loss. The preponderance of patriarchal societies, in which women are judged by their ability to bear children, also incentivise large families, and coupled with a lack of access to education, birth control, or political power, women who might otherwise have pursued a career beyond motherhood, or who might have preferred fewer children so as to work toward another vocation, are prevented from doing so. The consensus is that women's empowerment, women's education, and women's health, along with poverty alleviation more broadly, are the most effective and most equitable means to stabilise the world's population. Commentators had assumed that the environmentalist delegation to the UNICPD would be a thorn in the side of the conference, but by focussing on the means rather than the ends, both environmentalists and advocates of women's rights were able to agree on a plan of action (Cohen and Richards, 1994).

This reconceptualisation of the population problem all but annihilated classical and neo- Malthusian rationality. The environmental argument became the last remaining tenet of Malthusianism, having outlived all others—perhaps because more people really does mean less stuff, and there really are biophysical limits to the Earth's systems, but equally, perhaps, because environmentalism is a dominant discourse, whereas biological elitism is not.

The reliance by the Cairo consensus on empirical research may give the impression that it was the *advance of knowledge* that determined the course of events, but Malthusian knowledge has never gone unchallenged, and most of what the Cairo consensus draws upon had already been argued in some form or other in the past. Notwithstanding the obvious wisdom and erudition of Adams (2009), a theory based on the *advance of knowledge* narrative, as outlined in chapter 2 (§ 2.1.1), simply cannot fully explain the fall of environmental Malthusianism.

From the outset, classical Malthusians based their theories on a causal mechanism beginning with overpopulation and ending in a range of social ills including poverty, disease, and conflict—not to mention the 'vice' that made classical Malthusianism distinct. Neo-Malthusianism carried forward this causal belief, calling for various types of birth control explicitly for the prevention of the social and economic woes ostensibly brought about by overpopulation. There were moral arguments even before Malthus published his essay on the subject, notably a satirical pamphlet, published by Jonathan Swift, titled *A modest proposal* (1729), which suggested as a solution to the population problem that the poor simply sell their children to the rich as a delicacy. But more serious empirical challenges to the tenets of Malthusianism were also forthcoming (Chase, 1975; Mayhew, 2014).

To give but one example, a young economist by the name of John Maynard Keynes was, at first, taken by the population problem (1923), before being forcefully rebutted by Sir William Beveridge (1923) The meat of the accusation was that Keynes had cherry-picked examples of countries that were both poor and densely populated, whilst ignoring the very poorest countries in the world, found across the most sparsely populated continents of Africa and South America. Keynes made little mention of population from then on, and took a far more reticent approach when he did (Toye, 1997), but the Malthusian discourse at large was impervious to such criticisms—of which there were many.

Environmental Malthusianism was not without its own detractors. Within the environmental movement itself were dissenting voices, who challenged the orthodoxy that placed population growth at the centre of the environmental problematic. In 1970, ecologist Barry Commoner entered into debate with Paul Ehrlich, armed with a very simple calculation: that in the preceding 25 years, population had risen by up to 45%, whereas in the same 25-year period, pollution had risen by up to 1000%. It was simply not possible for the rise population to fully account for the rise in pollution. Commoner argued that, while population growth was a factor, the main issue of concern for environmentalists should be industrial pollution (Egan, 2007, pp. 118–119), but again, Malthus barely flinched.

What these examples have in common is that their simple empirical observations were completely eclipsed by the fact that they were spoken from a position of discursive subjugation. Swift's (1729) satirical swipe at the cold logic of government and the elitism of the ruling classes did not stay the march of modernity, nor the creation of Malthus' essay some 70 years later. The confrontation between Keynes (1923) and Beveridge (1923) was not purely mathematical, Beveridge was a socialist and objected to Malthusianism on the basis that it was a ruse designed to oppress the proletariat. Keynes and Malthus were on the side of capital; Beveridge and Marx were on the backfoot. Commoner's observation on pollution and population growth was met with a torrent of angry letters from environmentalists who objected to anything that might complicate or otherwise draw attention away from the population problem. Commoner's only support came from anti-Malthusians with little or no interest in the environment (Egan, 2007). There is no reason to assume that the collapse of Malthusian doctrine and subsequent establishment of the Cairo consensus was a result of the *advance of knowledge* alone: only a change in the multiplicity of force relations could facilitate such an effect, and it is my contention that this change in force relations was the *rise of feminism*.

6

The under-appreciated effects of feminism

While there are multiple intersecting reasons for the decline of environmental Malthusianism, I would like to draw attention to one, somewhat underappreciated, determinant. The word 'feminism' has several meanings in everyday usage, stemming from ontological differences regarding the nature of sex and gender, and normative differences regarding the methods and outcomes of feminist practice (*cf.* Butler, 1990; Nussbaum, 1999). Feminism can at first appear to corral a disparate array of oppositional positions into an unwieldy category, but the principles that bind these differing views are straightforward: at various times and places, women have been treated as second class citizens, denied the right to own property or to vote, denied the same opportunities for education and work as their male counterparts, belittled, devalued, and dismissed (Freedman, 2002). Even in societies where these issues have ostensibly been addressed, structural inequalities persist in the form of 'gender gaps' in areas such as pay, education, and political representation (Faludi, 2006). Thus, despite the diversity that characterises feminist theory and praxis, feminism can still function as a useful category (Unger, 2014), conceptualised as a loosely associated set of practices, poly-centric, and occasionally adversarial, but ultimately bound by a common struggle.

My use of the word 'feminism' in the context of Malthusianism refers to something more fundamental than individual experiences or metrics. Feminism, for the purposes of this analysis, is the accumulated forms of resistance and counter-conduct that emerge in response to the exercise of power over, against, and through women. The link between feminism and Malthusianism is, in this sense, glaring, because the fundamental relation of power that underpins all Malthusian thought, and its desire to govern reproduction, is ultimately a relation of power between Malthusians and women. Indeed, it is not even eco-feminism—an explicitly environmentalist strand of feminism (Sargisson, 2001)—that is of relevance to the current analysis. The historical effects of feminism on the development of environmentalist thought are indirect and implicit; by

undermining the fundamental relation of power that made environmental Malthusianism thinkable, feminism pulled the rug out from under the dominant discourse of environmentalist thought, necessitating the uptake of a new form of environmental politics.

To be clear: I am not offering a feminist critique of Malthusianism, nor am I recounting a feminist critique made by anti-Malthusians; what I am showing is the effects of feminist problematisation on Malthusian rationality—as revealed by the Malthusians' own discourse. By confining the analysis to what was said and done by the Malthusians at the time, I avoid the traps of anachronism and normative judgement. Following Foucault's 'rules' of genealogy, outlined in chapter 3 (§ 3.4.5), I have no intention of treating history as an extension of the present, judged by the standards of the present, nor do I intend to cut across epistemic boundaries, to hold one form of knowledge to the standards of another. The crucial point to keep in mind is not that feminists criticised Malthusianism; the point is that Malthusians problematised their own practice, and cited feminism as the cause.

The notion that feminism threw a spanner in the works of Malthusianism is not new (Connelly, 2008); but, by that same token, the fact that feminism has indirectly revolutionised environmental politics has been greatly underappreciated. In case there were any doubt about the causal nature of this relationship, one need only look to the environmental Malthusians themselves in response to their own predicament. Third-generation environmental Malthusianism, remade in the image of the Cairo consensus, is a direct response to the overwhelming force of feminist critique.

There were other assailants. Beveridge (1923) and Commoner (Egan, 2007), as noted in chapter 5 (§ 5.3), tried to temper the Malthusian fever with the *advance of knowledge*, but to no avail. In the service of *political will*, neo-liberal economists won many arguments on the dynamics of resource scarcity (Sabin, 2013; Simon, 1981), but environmental Malthusianism did not become more neo-liberal in response. The blunt intransigence of *political impossibility* may have pushed Malthusianism to the fringes of the United Nations, but it merely pressed on with the development of its own global *dispositif* without the [direct] support of officialdom. Just as the second generation arose out of the unacceptability of biological elitism, third-generation environmental Malthusianism was wrought by the *rise of feminism*, the difference being that, this time, the newly emergent multiplicity of force relations broke the very foundation of Malthusian power, and forced it to the fringes of political discourse.

6.1   The fundamental relation of power in Malthusian thought

At the foundation of every form of Malthusianism is a basic relation of power between those who would govern and those who would be governed; which is to say the relation of power between the Malthusians and women. This is not an uncontentious statement. Malthus himself did not single out women, but impoverished couples, as the agents of reproduction (1826). Foucault's analysis locates "the Malthusian couple" as both the subject of government, and the mechanism by which bio-power could be exercised; "the family organization", he wrote, "precisely to the extent that it was insular and heteromorphous with respect to the other power mechanisms, was used to support the great 'maneuvers' employed for the Malthusian control of the birthrate, for the populationist incitements" (1978, p. 100; pp. 104–105). But there is both reason and evidence to suppose that the ultimate target of population control is not the family or the couple as such—although they still function in the 'mechanism' of power—but specifically the woman, or more precisely, the bodies of women.

Along the four stages of Malthusian thought, outlined above, there is a moment at which the objects of concern cease to be purely abstract and begin to protrude into concrete reality—the point at which 'something must be done', and a plan to control population is hatched. The precise details and mechanisms by which control is to be affected can differ greatly from scheme to scheme, but they all have one thing in common: they must result in the prevention of live births. At this point the Malthusians must—as we all must—deal with the facts of life; the biology of the human species. The only way to stop babies being born is to stop women having babies. It does not matter what mechanism is constructed to achieve this outcome—whether it is the attempt to revoke the 'poor laws', as in Malthus' time, to promote smaller families with the threat of hardship (Huzel, 1969), or the now infamous financial inducements given to Indian men during the 1970s in exchange for undergoing sterilisation (Balasubramanian, 2018), or even the rather less contentious practice of providing education and healthcare to young women to promote opportunities and ambitions beyond motherhood (Ehrlich *et al.*, 1995)—the ultimate goal is to prevent the carriage of a human child to term, which can only take place in the body of a woman.

The elaborate practices built up around Malthusian politics emerge out of the impossibility of unmediated access to the biological processes of reproduction. It is not even the woman herself—the person, consciousness, citizen, or soul—who is the final

link in the chain of power, it is her womb that is marked for intervention. There are extreme cases in which the woman herself can be bypassed entirely, in which doctors can decide to abort under the authority of 'best interest', or a court can grant permission to sterilise (BMA, 2007; 2014). But these instances are rare and exceptional—and for the most part, unavailable. The typical route by which Malthus must exert his influence over biology is tortuous and fraught. By enlisting the woman, the family, or the community; in the home, the school, or the hospital; by legal, fiscal, persuasive, or coercive measures, Malthusians must engage with the multiplicity of force relations that separate them from the biological process.

The point is not lost on Malthusians themselves, particularly environmental Malthusians, whose discourse has a distinctly biological bent to begin with. When the concern was for eugenics alone, the quality of both mother and father were equally important, and the prevention of each from procreating was of equal priority. With the introduction of the Malthusian element, quantity takes precedence, and the divergent roles of men and women are thrown into sharp relief. From the time of Malthus himself, the Malthusian couple was the target of governmental strategy, because the family unit was the only 'legitimate' site of procreation. By the mid 20th century, however, the Malthusian couple was giving way to other subjects borne of changing demographics, sexual politics, and power relations. Greene (1999) for example observes that, in 1960s America, the Malthusian couple was increasingly supplanted by the 'single black woman' as the target of neo-Malthusian intervention. In the absence of a traditional family unit, other leverage points such as the social worker, welfare officer, medical professional, or even the town planner, became the vector by which power was exercised over the bodies of those women.

By the time the biologists of environmental Malthusianism—such as Hardin and Ehrlich—were constructing their vision, women were not necessarily bound by the family unit, and population biologists were prone to thinking of human females as they might do any other species. To illustrate the point, first-generation environmental Malthusian Garret Hardin chose for his metaphor the practice of culling deer. Using visceral imagery to great effect, Hardin wrote: "When it comes to overpopulation in a polygynous species like deer you had better concentrate your fire on the females, for they are demographically the more dangerous sex: they bear the babies. If hunters shoot 90 percent of the males, the remaining 10 percent of the bucks can 'service' all the females. On the other hand, if hunters should shoot 90 percent of the females, population growth will be reduced by 90

percent for that season" (1993, pp. 210–211). Hardin was referring directly to the writings of Aldo Leopold, a hunter-cum-conservationist whose thought is widely considered to be instrumental to the development of both ecology and environmentalism (Flader, 1974). Ungulate metaphors feature heavily in problematisations of population, with frequent references to Leopold's deer (1949), or Townsend's goats (1786), but of course, Hardin was not interested in the population of deer. As with the cattle grazing his commons, the doe in Hardin's rifle scope was human, and his point was one of dispassionate, biological process.

At times, Hardin's subjectivation pushes much further into biological abstraction. In a single-page article titled *Parenthood: right or privilege?* (1970, p. 427), Hardin reduces the relationship between parent and child to the passing down of a pair of chromosomes. On this basis, he attempts to sever any rights a parent might have over their own offspring. "On a biological level", writes Hardin, "the idea of ownership of children has not been defensible for almost a century, not since August Weismann drew his celebrated diagram of the relationship of germ plasm to somatoplasm". With his child-concept in place, Hardin deals with some formalities: "The Women's Liberation Movement may not like it, but control must be exerted through females. Divorce and remarriage play havoc with assigning responsibility to couples or to men. Biology makes women responsible". And since the matter is one of mere biological process, it "should be easy to limit a woman's reproduction by sterilizing her at the birth of her nth child". Of course, he would much rather enlist women to the cause, because "if parents see themselves as trustees of the germ plasm and guardians of the rights of future generations, then there is hope for mankind", but no element of choice is implied; "a purely voluntary system selects for its own failure: noncooperators outbreed cooperators". All of this is in answer to the question: "How can we reduce reproduction?". From the outset, Hardin has his sights set on the fertilisation of an egg in the womb. From there he works outward; can we simply sterilise? Can we enlist the woman? Is there any point in targeting couples? He lists education, community nurseries, and tax rewards as tools of ever decreasing desirability; persuasion first, then 'mild coercion'. Ultimately, reproduction must be reduced, the only question is how. "The 'right' to breed… is no longer tenable", says Hardin, because society has a more pressing right to control population.

This is, to be fair, a rather extreme example, but Hardin's candid treatment of the subject reveals the logical extents of a discourse that might otherwise have been confined to hushed company. Second-generation environmental Malthusian discourse is perhaps

less abrasive, but no less biological in its conceptualisation. Environmental Malthusianism has at its centre a biological scientific process, the reproduction of a large mammal species, the population of which has outgrown its habitat, and is about to enter the crash-phase of irruption.

Foucault (1977) wrote about how the body is made, shaped, and inscribed by power relations; that our bodies are not solely the effects of genetic expression, but the result of interactions between biological and social processes. Just as the soldier's back is straightened by discipline, the feminine body is the terminal form of multiple forces, acting upon posture, bearing, and station (Butler, 2004). But the point I wish to make is not a rehash of Foucault's analysis of power and bodies—though that process does exist here in the form that Foucault describes—nor a broad analysis of 'genopolitics' across the centuries and across political domains, as outlined by Dean (2015). Rather I wish to make a specific point about the action of environmental Malthusianism upon women's bodies, and the way in which this specific strategy of power is entangled with the knowledge-form of biology.

Whereas earlier incarnations of Malthusianism had as their chief knowledge-forms economics and sociology—resulting in the subjectivation of individuals as social and economic agents, acted upon by social and economic mechanisms—the biologists of environmental Malthusianism imagine their subjects as biological entities, enmeshed in biological processes, who must be acted upon as objects of biological knowledge. When viewed through a Foucauldian lens, there is an elegant circularity to environmental Malthusian subjectivation. It is certainly true that our bodies are not the sum of our genes alone, that our physical form is the result of interactions between biological, environmental, and social processes, but in environmental Malthusianism there is an attempt to restore the body to a pure biological form and escape the prison of subjectivation.

This is, of course, an illusion. The biological subject is itself a construct of biological knowledge, a rough approximation, a reduction of reality. The use of biological knowledge to both affect change upon the bodies of individuals and enlist those bodies as agents of further action is no less an exercise of power than any of the examples delineated by Foucault (1977; 1978). As if presented with a child at a fairground with her face painted as a tiger, the environmental Malthusian wishes to wipe away the painted tiger to reveal the child beneath, but the only tool he has at his disposal is a paintbrush, so he paints a simple face on top.

6.2   Malthusian women's empowerment: a new power over women

Stories of Malthusian extremism may titillate and delight, providing an easily identifiable bogey-man to reaffirm our own normative distinction, but the later stages of environmental Malthusianism present a more ambiguous tale of mixed intentions and humble compromise, demanding a more sophisticated appreciation of its normative complexity. When third-generation environmental Malthusianism embraced women's empowerment as its primary means of population control, it did so with the unguarded intention of rekindling the relation of power at the foundation of Malthusianism: the control of women's bodies. As demonstrated above, no matter what the actual mechanism of power used to prevent women from having children, the end goal is always to affect that specific control over the bodies of those women. But the expression of this intention need not be as stony and blunt as Hardin's invective; the Ehrlichs try to demonstrate care for both women and the environment while seeking the same end. From an analytic perspective, it is useful to oscillate between views of the extreme and the pragmatic, to show a glimpse of an unvarnished and uncompromising discourse in contrast to the messy reality of long-term political activism that derives from it. It shows that the real exercise of power is, necessarily, a reactive and adaptive process.

With sincerity, the Ehrlichs address the consensus to which they now belong, noting that "in Cairo, women's health, well-being, and empowerment were major topics of discussion and were prominently included in the Programme of Action. We think that emphasis was appropriate; no step toward empowering women could be more basic than meeting their health needs." (Ehrlich *et al.*, 1995, p. 80). But there is no mistake, no prevarication, no confusion; their purpose is transparent: "There is, after all, considerable evidence that when they are empowered, by literacy, job opportunities, and freedom from illness, women (and their families) are better off in every way *and* will choose to have fewer children" (*ibid.*, p. 80). The point is only complicated by the fact that women's empowerment is normatively progressive. There is no contradiction in believing that both empowerment and population reduction are forces for social and environmental good, and consequently that Malthusian women's empowerment might be mutually beneficial for Malthusians and feminists alike. One of the great contributions of Foucault on the analysis of power is that power cannot be understood solely as a 'repressive' force; power is at all times 'productive'. The effects produced by power have no normative prerequisite—they can be good, or evil, or neither (1977; 1978). Third-generation

Malthusianism is one such case, where in order to force the desired outcome, one need only do good in the world.

The moment of contention occurs in a hypothetical space, at the posing of the question: what if women's empowerment did not reduce population? If these two desired outcomes were in conflict with one another, then which should take precedence? The answer for Hardin is, as one might expect, clear and unambiguous: "Birth control is not population control" opens his (1970) article; "Birth Control versus Population Control" heads a chapter of his (1993) book—the outcome of which being that birth control "is *necessary but not sufficient* to achieve population control" because "the average woman wants a family that is greater than the number needed to produce zero population growth" (*ibid.*, p. 258, emphasis in original). But Hardin's first-generation environmental Malthusianism is the vestigial echo of a long-subjugated discourse, in which women are to blame at a biological level. The third-generation of environmental Malthusianism has internalised the consensus that women's empowerment is the most effective and the most equitable means to stabilise the world's population, and directed its apparatus in the service of that aim (see Population Matters, 2019, for an example of contemporary practice). For as long as these two outcomes share a complimentary—if uneasy—alliance, then the associated practices do not fall into the field of contention in the same way that Malthusian practices have done in the past. But the point still stands, if only as an academic one, that this new Malthusianism promotes women's empowerment for the purposes of governing reproduction, the difference being that now it must work within the newly emergent multiplicity of force relations brought about by the *rise of feminism*.

6.3   The impossibility of Malthusian discourse

Feminism is the one hurdle that Malthusianism could not overcome. Malthusian ideas persisted for hundreds of years, overcoming religious objections to contraception, outliving the brazen biological elitism of eugenics, even sidestepping academic critique of its faulty figures, mistaken assumptions, and falsifiable theories. But the delegitimisation of the relation of power at the very foundation of Malthusianism made it all but impossible to practice Malthusian discourse, and with that fundamental weakness opened up, Malthusianism was unable to resist the onslaught from opponents on every other front. Anti-racists and trade unionists, conservatives and liberals, socialists and

capitalists, all found themselves standing shoulder to shoulder with feminism; against Malthus. Those who still believe that population control is the method by which a host of environmental, social, and economic problems could be solved have been forced to dance to someone else's tune, subordinated to the imperative of women's rights.

This point is not lost on the literature concerning the history of Malthusianism more broadly, but accounts of the history of environmentalism have underappreciated the true effects of feminism as a historical determinant. Whilst the *advance of knowledge* in demography, the *political will* of the New Right, and *political impossibility* at the United Nations are still important factors—and should be in no way diminished by this addition—the indirect effects of the *rise of feminism* must be recognised as the catalyst that shook the foundations of environmental Malthusianism, and by extension the modern environmental movement as a whole. When Malthusianism lost its fundamental relation of power, so too did its environmental offshoot, which left a vacuum in environmental politics, ready to be filled by the next big idea.

7

Discussion: ecological modernisation and the vacuum in environmental politics

By all accounts, the transition from environmental Malthusianism to ecological modernisation was a three-stage process. Ecological modernisation did not beat its predecessor into submission and seize the throne in linear progression. Rather, environmental Malthusianism collapsed, creating a vacuum in environmental politics, which was then filled by its successor. The basic form of the transition is agreed across the literature, and I have no intention of disputing that here. My intention is to open up the process, to interrogate its implicit assumptions, and to situate it in relation to the genealogy of sustainability. This is not a repeat of the treatment given to environmental Malthusianism, applied to ecological modernisation; it is a discussion of ecological modernisation's entry into the vacuum of environmental politics and its broader political context, drawing on the genealogical insights gained over the course of this research.

I begin by framing the three-stage process as a common historiographical narrative, mirrored in the example of neo-liberalism—an emergence which occurred at the same time, and in the same epistemic space as ecological modernisation. I continue by locating the concept of ecological modernisation, relying on existing analyses from the literature and reflections by some of its pioneering theorists, and inflecting those accounts with insights garnered from the present study. I then trace the intellectual roots of ecological modernisation; not only in the overt sense of the environmental policy process, but also the 'conditions of possibility' established some years earlier by the OECD Environment Directorate. I then delve into the historical-political context of ecological modernisation through its complicated relationship with neo-liberalism, establishing a political and discursive affinity between the two, but highlighting their fundamental differences. Finally, I situate ecological modernisation within the genealogy of sustainability, highlighting its role as the dominant discourse of environmental politics,

and discussing its perceived successes and failures in relation to the non-discursive practices of sustainability.

7.1   The three-stage process

It is a common narrative in the history of political ideas: the orthodoxy falls out of favour and the neophyte seizes the opportunity. One never 'wins' an election; the incumbent loses, and the opposition takes over by default. As Milton Friedman reflected on the rise of neo-liberalism: "Only a crisis—actual or perceived—produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around" (1962, p. xiv, preface to the 1982 reprint). According to Friedman's narrative, it was only the failure of Keynesianism—actual or perceived—and the subsequent vacuum it left, which offered the chance for neo-liberalism to flourish, and it could only do so because its theories were sufficiently developed and ready to be put into practice. Without the failure of Keynesianism, neo-liberalism may well have remained an academic pursuit. For Friedman, the role of thinkers is "to keep options open, to have available alternatives, so when the brute force of events make a change inevitable, there is an alternative available to change it" (quoted in Stedman Jones, 2012, p. 180).

This is an oversimplified autohagiography of course. In reality the neo-liberal political movement was advanced through the establishment of think tanks and other lobbying groups around the world (*ibid.*). They produced specific forms of knowledge to promote their message, tailored to the political winds of the time, repeatedly and consistently bending the ears of well-placed policymakers in key government departments. Neo-liberalism was a well-funded political movement—not of the mass-protesting, mass-public sort, but the sort that engaged in quiet manoeuvres and targeted strategies.

The story of ecological modernisation is similar on both counts: on the surface, the orthodoxy of Malthusianism fell out of favour and the neophyte was ready, willing, and able to take its place; beneath the surface, ecological modernisation was years in the making, its proponents actively working to bring it to fruition through the discursive practices of think tanks and the policy process (Hajer, 1995). As environmental Malthusianism was attacked from all sides, its legacy became toxic, and the ensuing crisis opened up the opportunity—the necessity—for an alternative form of environmental

politics. A potential suitor would require two qualities; first, to be sufficiently distanced from the failed incumbent, so as not to be associated with its toxic legacy; and second, to be sufficiently developed, and ready to be put into practice. Ecological modernisation was perfectly placed.

The fact that ecological modernisation was sufficiently different from environmental Malthusianism is an easy deduction. It has nothing to say on the subject of population, and is emphatically not 'radical' in any conventional sense of the word. There is no desire to overturn the liberal economic orthodoxy, no attempt to end economic growth, no overt schemes to exercise power over women, or the poor, or any other maligned group. In Dryzek's (2005, p. 170) words, "limits are not so much explicitly denied as ignored". Ecological modernisation is an example of what Rose and Miller (1992) describe as 'governing at a distance'; not just the use of market mechanisms associated with neo-liberalism, but an unlimited range of techniques designed to affect positive environmental outcomes without directly or overtly intervening in the lives of private individuals. In short, ecological modernisation bears the hallmarks of a politically liberal, economically capitalist, and technologically optimistic form of environmentalism.

The notion that ecological modernisation was sufficiently developed and ready to be put into practice is a little less clear-cut. Its first explicit appearance is generally traced to a speech given to the Berlin state parliament by Martin Jänicke in 1982 (Mol and Jänicke, 2009), with Martin Jänicke and Joseph Huber widely considered to be its founding fathers (Spaargaren, 1997). But what I shall attempt to show in this discussion is that, although there were no books, papers, or theories bearing the name before its meteoric rise, the discursive formation within which ecological modernisation operates was already well established—not just in the 1970s as others have noted (Hajer, 1995; Machin, 2019), but sometime before. Once the ecological problematisation was integrated, it merely required the opportunity to flourish—which was presented by the collapse of environmental Malthusianism.

7.2   Locating ecological modernisation

Despite the fusion of two large and unwieldy concepts—ecology and modernity—the term 'ecological modernisation' is used in a narrow and easily identifiable sense in the sustainability literature. The term itself is uncommon outside of academia, but the

discourse of ecological modernisation is widely prevalent, saturating the environmental policy process across the developed world (Hajer, 1995)—and in recent years, becoming more global (Mol, 2011). In this sense, ecological modernisation is now the dominant discourse of environmental politics (Blühdorn, 2000; Hajer, 1995; Mol, 2001).

By 'dominant discourse' I do not mean that ecological modernisation is in any sense 'hegemonic'—a criticism brought by Dryzek (1995) against this same conclusion—I merely mean that it is the mainstream view amongst environmental policymakers, dominating other discourses of environmental politics. Because of its attitude of reform over radicalism, ecological modernisation has gained much greater traction in political institutions than environmental Malthusianism ever did; but at the same time, it has deepened the schism within environmentalist discourse: between those who wish to reform the system from within, and those who wish to replace the system with a radical—albeit non-Malthusian—alternative.

The scholarly view of ecological modernisation acknowledges two distinct uses of the term: one as a description—and prescription—of a set of loosely related practices, which constitute a political programme of environmental reform for industrialised societies; the other as a social theory—a theory of modernity—which integrates the ecological problematisation with the ongoing project of modernity (Buttel, 2000; Mol, 1996). These two distinct objects of knowledge do, however, remain entwined. As a phase of modernity, captured in social theory, ecological modernisation is a space within which a political programme of environmental reform is necessitated; as a political programme, a set of practices, it is a new social and political *milieu* which demands a social-theoretic explanation. As such, these two views of ecological modernisation—theory and practice—are two sides of the same coin.

Ecological modernisation can be understood as having three fundamental predispositions which set it apart from earlier, more radical forms of environmentalism. Firstly, a belief that the prevailing socio-economic and political structures of capitalism, industrialisation, and economic growth are here for the foreseeable future, therefore solutions must be sought within them. Secondly, a belief that human ingenuity, spurred by both regulation and market forces, can provide clean technologies that mitigate the worst of our environmental impacts. And thirdly, a belief that production and consumption—and therefore pollution—can be decoupled from economic activity, enabling economic growth to incur a manageable level of environmental pressure. In

short, ecological modernisation means capitalist production, technological optimism, and economic decoupling.

There are, however, a few subtly different expressions of ecological modernisation, which have developed over time and across ideological divides. Mol (2001, pp. 57–58) identifies three stages in its development. The first stage, beginning in the early 1980s, was what could be described as its 'neo-liberal phase', displaying a faith in the power of markets to achieve positive environmental outcomes with minimal intervention. This first stage proved overly optimistic, the light-touch approach to regulation yielding little in the way of cleaner production or changed behaviours. The second stage, from the late 1980s on, sought to balance the roles of state and market, and displayed much less faith in the ability of technology alone to overcome the environmental impacts of society. This second stage set in motion a range of policy instruments that made ecological modernisation workable—though still in its infancy—but suffered criticism for its Eurocentrism, and its focus on processes and production rather than cultures of consumption. The third—and current—stage, from the mid 1990s onward, sought to resolve these failures by integrating production, consumption, and globalisation into the theory. But in its third incarnation, the ever-expanding remit attracted criticism that the theory was too bloated, and no longer capable of explaining the full diversity of environmental policy—especially outside of a transatlantic context. In terms of motivation and *modus operandi*, however, this third phase of ecological modernisation still accurately describes the practices of environmental policy across the developed world: a *dispositif* aimed at the problems of clean production, sustainable consumption, and the globalisation of environmental reform.

Despite the differences between these three stages, Mol (*ibid.*, pp. 58–59) suggests that all of these contributions should still come under the heading of ecological modernisation, not simply because they label themselves as such, but because they have the same basic characteristics in common: they all begin with the assumption that the problem requires sociotechnical and economic reform, rather than radical structural and institutional upheaval; they all assume that this reform must take place in the fields of science and technology, the nation-state, and international politics, and globalised; and they all occupy a position in academia and political thought which is emphatically not 'neo-Marxist', 'counterproductive', or 'post-modernist' in its analysis.

This last point is of particular interest in any attempt to locate ecological modernisation in academic discourse. In Mol's conception, ecological modernisation is

set in direct opposition to other positions on the ecological problematisation: the 'neo-Marxist' critique, which cites environmental limits as the second contradiction of capitalism (*cf.* O'Connor, 1988); the 'counterproductivity' argument, which assumes that decoupling is unlikely, therefore infinite economic growth on a finite planet is absurd (Commoner, 1971); and 'post-modernist' analyses, by which Mol means the undermining of the institutions of modernity with a view to establishing alternative institutional and social frameworks. Mol's assertion that ecological modernisation is set in opposition to these standpoints may be true of the social-theoretical half of ecological modernisation—which happened to be authored by scholars who rejected the normative pretext of neo-Marxist/counterproductive/post-modernist analyses—but it cannot be true of the loosely associated set of practices that make up ecological modernisation in concrete reality. These practices are amenable to all modes of social and political analysis—and therefore open to alternative theorisations (*cf.* Blühdorn, 2000; Dryzek, 2005).

The normative aspect of ecological modernisation is expressed in other ways beyond the epistemic home of its theorists. It is, at heart, a form of environmentalism. As such, the proponents of ecological modernisation are at all times concerned not just with the fact of ecology's integration with modernity, but the extent to which it is integrated, and ultimately its effectiveness in mitigating the worst of industrial society's environmental impacts. As a result, the concepts of 'weak' and 'strong' ecological modernisation emerged as a means to judge it against the normative ideals of environmentalism (Christoff, 1996)—judgements of 'weak' and 'strong' having become something of a tradition in the critique of sustainability (Hobson, 2013; Neumayer, 2010). In its 'weak' incarnation, ecological modernisation gives primacy to the demands of industry and established institutions for slow transitions, light-touch regulation, and conventional decision-making processes; in the 'strong' version, the state, armed with environmental science and a democratic mandate, dictates the terms of ecological transformation, to which industry must adapt to survive.

The weak *versus* strong dichotomy belies a tension in ecological modernisation, which has survived environmentalism's transition out of its more radical history. From the environmentalist's position, the point is not to 'save modernity'; the point is to work with modernity, in order to save the planet. Success is measured not by how well the project of modernity is preserved, but by how well modernity can preserve the environment. This is at the root of what Dryzek (2005) shrewdly observes as ecological modernisation's latent radicalism. Dryzek notes that in a limited, technical sense,

ecological modernization looks like "a discourse for engineers and accountants", but it contains within it the seeds of something more: "a restructuring of political and economic life, rather than a mere re-tooling of industry" (*ibid.*, p. 172).

In this sense ecological modernisation is—potentially at least—deeply subversive. Its purpose is not to tag along with the modernisation process; its purpose is to co-opt and transform modernity in pursuit of an ecological utopia. Critics who dismiss ecological modernisation as 'business as usual' neglect the transformation of ontology wrought by the birth of ecology. The ecological problematisation that signalled the emergence of sustainability now saturates the project of modernity. Ecological limits now factor in the judgement of whether modernity is a success or a failure. Ecological modernisation is a sign of something profound. Modernity did not co-opt environmentalism; environmentalism co-opted modernity.

The distance between ecological modernisation and other, more radical forms of environmental politics is not as great as its critics suggest. They share the same normative aim, if not the same objectives. They share the same implicit normative hierarchy: the environmental comes first; their respective systems—modernity, neo-Marxism, counterproductivity, post-modernism—must bend or break to accommodate it. The differences occur in the belief that the institutions of modernity are not capable of providing the reductions in pollution or other environmental impacts necessary to avert ecological disaster, due to its reliance upon capitalism and growth, or simply the ineffectiveness of its institutions. This is generally clumped together with other criticisms of modernity—the inequalities produced by capitalism, the legacies of historical imperialism, the domination of nature—in which environmentalism is turned into another weapon in the arsenal of a general radical political groundswell.

From a purely environmentalist perspective, however, there is an argument to be made that ecological modernisation has so far done more to slow the environmental impacts of industrial growth than any other form of environmental politics (see Dryzek, *ibid.*, ch. 8). One could argue that this is because no other method has been given the same opportunities; the only reason ecological modernisation has achieved its modest success is that it is the only method to be implemented at scale. But then the only reason ecological modernisation has been implemented at scale is that has successfully navigated the multitude of power relations necessary to gain institutional recognition. From a Foucauldian perspective, the effectiveness of ecological modernisation rests on its ability to manipulate the multiplicity of force relations that stand between the idea of

environmentalism and its implementation. Until a sufficiently disruptive event causes a shift in the configuration of those force relations, ecological modernisation is likely to remain the dominant discourse of environmental politics.

7.3   The intellectual roots of ecological modernisation

Whilst the term 'ecological modernisation' was coined in the 1980s, and most of its associated practices began in the same decade, its intellectual roots go back much further. The earliest document I shall be discussing here is from the 1930s, but the discursive practices embodied in it are certainly older than that. As the name suggests, ecological modernisation is an attempt to integrate the ecological problematisation into the project of modernity, and as such it fits broadly within the tenets of modernity, stretching back to the beginning of the enlightenment. But the specific discursive practices that delimit the discourse of ecological modernisation are more identifiable as a form of political economy that suffused the 20th century, and it is this intellectual heritage I wish to examine.

Working backwards through the various stages of the process, I shall begin with the explicit development of ecological modernisation in the 1980s, with particular focus on the think tanks and policymakers who were instrumental in promoting the concept across Europe. I then highlight the Polluter-Pays Principle adopted by the OECD in 1972, which, I argue, created the conditions of possibility for ecological modernisation to develop. Lastly, I unearth a very early example of the economic gaze turned upon the problem of conservation, which reveals that the discursive formation directing the logic of both the Polluter-Pays Principle and ecological modernisation existed as early as 1931—it merely did not give serious consideration to the ecological problematisation until much later.

7.3.1   1980s: think tanks, policymakers, and power-knowledge

Hajer (1995) provides a comprehensive analysis of ecological modernisation discourse, covering its emergence and establishment in the policy process of countries in the European Union during the 1980s. Hajer's work is broad ranging, and I have no wish to relay it here in full. Instead, I shall focus on a specific set of insights brought by Hajer,

regarding the role of think tanks in the dissemination of environmentalist knowledge, and the role of policymakers in establishing ecological modernisation as the 'norm' of environmental politics. Both the think tanks and the policymakers in question operated at the nexus of ecological power-knowledge, acting as epistemic gatekeepers between environmentalism and environmental science on one side, and the apparatus of state on the other.

As discussed in the *advance of knowledge* narrative in the chapter 2 (§ 2.1.1), Hajer (*ibid.*) suggests four overarching reasons for the rise of ecological modernisation against the tide of environmental Malthusianism: that economic recession had created a pressing need for economic growth, quelling serious discussion about a post-growth society; that the environmental movement was becoming more professionalised, favouring strategic pragmatism over identity and protest; that environmental campaigners had achieved greater success by focussing on specific issues, such as acid rain or the ozone layer, instead of a general environmentalist message about population, industrialisation, or growth; and that there was, eventually, an alternative environmental politics available in the form of ecological modernisation. For Hajer, these factors combined to create the conditions of possibility for ecological modernisation to take root and flourish.

Each of these factors is marked by a certain discursive mode, which is conservative, pragmatic, and strategically instrumental in character. An unquestioning allegiance to economic growth snapped into place as soon as the luxury of economic stability had subsided, revealing a governmental rationality that was never really moved by the 'limits to growth' debate. When crisis loomed, the expertise called upon was not from the ranks of ecology or heterodox economics; it was economic orthodoxy. A certain type of environmental activist had taken note of the concrete successes and failures of the environmental movement, and concluded that public protest was not always the most effective tactic; engagement with existing institutions and power structures yielded tangible results. This included the power relation of 'public engagement'. The fatigue, caused by apocalyptic, existential, revolutionary rhetoric produced a desire for security, continuity, and manageable problems—solved by experts who had it in hand. Above all, there was a need for an environmentalist discourse that did not demand a new reality in order to function.

In my own analysis, none of these factors were directly responsible for the collapse of environmental Malthusianism, but they are all responsible for the

development of ecological modernisation, making it 'available' when the need arose. Hajer identifies two fora in which this development took place: "what came out in the 1980s", he notes, "was that during the 1970s environmental politics had not only been made on the streets: a far less visible, but undoubtedly essential development of environmental discourse had taken place in the domain of policy-making institutions and think-tanks" (*ibid.*, p. 95). The main think tank to which Hajer refers is the OECD— which perhaps does not see itself as a think tank, but certainly is certainly described as such in the literature (Busch, 2009; Marcussen, 2004). The OECD provided the economic and legal instruments required to integrate ecological concerns into existing institutional structures. In terms of the 'policy making institutions', Hajer paints a picture of young, idealistic environmentalists, graduating and taking jobs in civil service, carrying their environmentalism with them, but tempering it in view of what they came to know as 'the art of the possible'. These were the agents of change in the development of ecological modernisation, constructing an environmentalism that could operate within the constraints of *realpolitik*. Think tanks and policymakers, engaged in quiet manoeuvres, developing strategies aimed at integrating ecology with modernity.

The difference between this developmental stage in the 1970s and the overt ecological modernisation of the 1980s is its acceptance—and dominance—in environmental political discourse. Before the collapse of environmental Malthusianism, ecological modernisation lurked quietly at the fringes; afterwards, it seized its opportunity and filled the vacuum. This highlights a crucial point about the relationship between the environmental movement and environmental policymakers. By the end of the 1970s, the environmental movement was dominated by radical political thought. It fought tooth and nail to capture and transform the institutional structures of society, but had very little success. At the same time, policymakers working within those institutions were actively developing prototypal forms of ecological modernisation which could conceivably capture and transform society's institutional structures, but had little support from the wider environmental movement.

In short, the environmental movement could not affect political change without institutional support; and the policymakers could not advance ecological modernisation without the support of the environmental movement. Each had their own power-knowledge nexus, and each needed the other to manipulate the full spectrum of force relations required to address the ecological problematisation. The collapse of environmental Malthusianism altered the multiplicity of force relations, and ecological

modernisation found enough support in the environmental movement to move forward. Ecological modernisation is the terminal form of those two merging sites of power-knowledge.

7.3.2 1970s: the OECD and the Polluter-Pays Principle

The OECD played a pivotal role in the emergence of ecological modernisation. Before its intervention, the discourse emanating from the environmental movement had been uniformly catastrophic, demanding a complete rethink of society to avoid environmental disaster. The OECD Environment Directorate and Environment Committee[7], established in 1970, provided the tools to counter this discourse, beginning with the creation of the Polluter-Pays Principle (Bernstein, 2001; Hajer, 1995). By speaking the language and working within the boundaries of the established institutional structures of society, the OECD garnered the support of governments and institutions, who were empowered to act on their advice (Busch, 2009).

Formally adopted by the OECD in 1972, the Polluter-Pays Principle is a mechanism for allocating the costs of pollution control (OECD, 1992). The polluter, meaning the manufacturer or industry that originates the pollution, pays the estimated cost of abatement or clean-up, the assumption being that those costs will be passed on to the consumer. In this way the market should function to reduce overall levels of pollution, by incentivising the consumer to buy cheaper—and therefore cleaner—products, and incentivising the producer to develop cleaner—and therefore cheaper—processes. For instances where neither the consumer nor producer are sufficiently incentivised, the costs recovered by the Polluter-Pays Principle can be used to mitigate or offset the deleterious effects of the pollution. In order to function successfully, it is essential that no assistance is provided—grants, subsidies, tax allowances—with the exception of research and development for cleaner processes. Whether or not the Polluter-Pays Principle does what it is designed to do is debatable, but one thing it did do was transform the way in which environmentalism[s] can be conceptualised.

There was, in fact, an earlier work of economic theory—perhaps the earliest example of neo-liberal environmentalism, according to Mirowski (2013)—authored by

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[7] There is some confusion in the literature as to the dates and structure of these entities. To clarify: both the directorate and the committee were established in 1970, but they did not begin work until 1971. The directorate leads the committee and sets the agenda; the committee, composed of economic experts, produces research and makes recommendations, which it then passes up to the directorate.

Ronald Coase, who, in his paper *The problem of social cost* (1960), looked into the government of pollution using markets. Coase displays a position peculiar to neo-liberal environmentalism, that the aim of environmental governance "should not be to eliminate smoke pollution but rather to secure the optimum amount of smoke pollution" (*ibid.*, p. 42). By ensuring that the full cost of pollution is factored by the market, the theory is that the benefits will always outweigh the costs. Coase's contribution, however, did not make its way into the policy making process in the way that the Polluter-Pays Principle did; it was merely one more step on the journey.

The Polluter-Pays Principle marks the opening up of a possibility of thought. It was the first instance of serious intellectual consideration given to the ecological problematisation from the point of view of the established order of capitalist production, economic knowledge, and liberal democratic institutions. Before the Polluter-Pays Principle, the conflict between ecology and modernity was assumed to be irreconcilable. It was characterised by denial on both sides—denial that industrial capitalism could continue to exist; denial that ecological problems were real or pressing. The natural reflex of environmentalists was to shut down industry; the natural reflex of industrialists was to ignore and discredit environmentalism. The conflict was not merely a feature of radical political activism and institutional resistance; it was characteristic of even the earliest flickers of the ecological problematisation in international scientific discourse (Osborn, Jr., 1948; Thomas, 1956).

The most visible permutation of this was the conflict between environment and development, discussed in the *political impossibility* narrative in chapter 2 (§ 2.1.3). In the run-up to the Stockholm Conference in 1972, and in the resulting declaration, it was agreed that there should, and must, be a way to reconcile environmental protection and economic development. But the declaration offered no concrete proposals on how it might happen—it was merely an article of faith. The Polluter-Pays Principle, which was unrelated to Stockholm but adopted in the same year, provided one such concrete proposal, and in doing so, altered the conditions of possibility for environmentalist thought.

It is possible to trace a causal chain in which the OECD both enables and promotes this shift in environmentalist thought. Bernstein (2001) presents a telling interview with former OECD Environment Director, Jim McNeill, who recalls the International Conference on Environment and Economics in 1984, at which the OECD articulated its version of environmental governance. Business leaders and member governments were

well represented at the conference, and were strongly influenced by the OECD's particular strain of environmentalist thought. As McNeill put it, "the OECD is to classical economics what St. Peters is to Christianity. I mean it's the keeper of the keys" (McNeill quoted in: Bernstein, *ibid.*, p. 198). The OECD was trusted by its members, being committed to economic growth and security, and as such its analyses, concepts, and solutions were regarded as legitimate.

In McNeil's account, the reconciliation of ecology and modernity may have been mooted as early as 1970, but no one really believed it until the Environment and Economics conference in 1984. Before then it was still widely assumed that there would always be trade-offs between the two competing sets of demands. Gradually, however, the research produced by the OECD suggested—in theory at least—that economic instruments could not only produce better, faster results than other approaches to environmental policy, but that environmental protections themselves could be a source of economic activity and therefore growth (*ibid.*, p. 199). It was in these ways, over the course of the 1970s, that the complementarity between ecology and modernity became a thinkable.

There is a certain inevitability to the creation of the Polluter-Pays Principle, not because of some teleological path that we are bound follow, but because the OECD itself was already immersed in a discursive formation that predates the ecological problematisation—a discourse generally referred to as neoclassical economics. If, following Foucault (2007, ch. 4), we accept that political economy is the major form of knowledge informing governmental rationality from the 18th century onward, and if we regard neoclassical economics as the apotheosis of that mode of governmental epistemology, then the inevitability of the Polluter-Pays Principle—or something like it—can be deduced from the rules of its discursive formation.

The economists of the OECD like to think of themselves as 'scientists' of sorts (Marcussen, 2004). Even though their theories are unfalsifiable, and not reducible to universal laws in the same way as physics or chemistry, their methods are statistical, and their results are expressed mathematically. This scientism emboldens the OECD to derive a certain level of epistemic legitimacy; they are not 'interpreting' the world normatively, they are 'representing' the world mathematically, and are thus more 'objective' than political philosophers or activists. The ecological problematisation emerged out of the environmental sciences—real, 'hard' science—and so, when a consensus began to form on the scope and scale of environmental problems, the OECD were duty-bound to take it

seriously; if economists were to reject or delegitimise the environmental sciences, then why should anyone accept or legitimate the dismal science? They had to find an economic answer to the question of ecology and pollution. If you believe in the scientificity of economics, and you believe in the ecological problematic, then the only course open to you is to integrate environmental impacts into your economic models—and that is exactly what happened. The OECD diagnosed pollution as market failure, and prescribed a pricing mechanism as the cure.

7.3.3   1930s: The economics of exhaustible resources

> Contemplation of the world's disappearing supplies of minerals, forests, and other exhaustible assets has led to demands for regulation of their exploitation. The feeling that these products are now too cheap for the good of future generations, that they are being selfishly exploited at too rapid a rate, and that in consequence of their excessive cheapness they are being produced and consumed wastefully, has given rise to the conservation movement.
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> (Hotelling, 1931, p. 137).

This brings to our attention the curious case of Harold Hotelling. Hotelling is interesting on two counts: first, because he brushed up against environmental economics so much earlier than the OECD; but second—and mainly—because he reveals something about the logic of neoclassical and neo-liberal economism which has pervaded institutional environmentalist thought right through to the rise of ecological modernisation. It was only after the OECD decided to take environmental concerns seriously that the Polluter-Pays Principle was developed as a policy instrument. It did not take a long time—one year to set up the Environment Committee and propose the basic principle; another year to present a working model (Bernstein, 2001). There was no great leap of progress or paradigm shift, no long gestation and hard-won breakthrough; just old tools applied to a new problem in a mundane fashion.

Hotelling (1931) had taken up the problem of the 'conservation' of natural resources with what could be read as thinly veiled contempt. He equated the desires of conservationists with the real-world effects of monopoly, arguing that the conservation movement "may be accused of playing into the hands of those who are interested in maintaining high prices for the sake of their own pockets rather than of posterity" (*ibid.*,

p. 138). The outcome of conservation wold be high prices and short supply, profiting only a few rich capitalists to the detriment of society.

Hotelling offered a throwaway comment on the shape of the problem: "If 'combinations in restraint of trade' extort high prices from consumers and restrict production, can it be said that their products are too cheap and are being sold too rapidly?" (*ibid.*, p. 138). He was questioning the possibility of over-production in the presence of monopoly, but in the process, he shone a light on the relationship between environmental 'goods' and the operation of the market. This proposition, of course, embodies the basic statement of the Polluter-Pays Principle—if something is being consumed 'too fast' then it is obviously 'too cheap'. Even in his opposition to the views of conservationists, Hotelling attempted to formulate their problem in his own terms, and concluded that the problem was one of price.

Possibly without realising it, Hotelling managed to pre-empt several of the major debates in sustainability that would unfold half a century later. On the topic of intergenerational justice, Hotelling argues: "if it is agreed that the total supply is not to be reserved for our remote descendants and that there is an optimum rate of present production, then the tendency of monopoly and partial monopoly is to keep production below the optimum rate and to exact excessive prices from consumers" (*ibid.*, p. 138). This point is later taken up—independently—by Wilfred Beckerman (1974), in his neo-liberal critique of *The Limits to growth* (Meadows *et al.*, 1972). The crux of Beckerman's argument being that the artificial scarcity caused by conservation would adversely affect the quality of life for people alive in the present. For Beckerman, it is not immediately obvious that the rights of someone not yet born, whose needs are not yet known, are equal to the rights of someone who is alive right now, whose needs are urgent and dire.

Hotelling also mentions population growth and, in the same breath, technological advance, pre-empting the neo-liberal critique of environmental Malthusianism: "The growth of population and the rising prices to consumers of competing exhaustible goods would lead to [a higher rate of exhaustion] … On the other hand, the progress of science might lead to the gradual introduction of new substitutes for the commodity in question, tending to [reduce the rate of exhaustion]" (1931, pp. 153–154). This forms the basis of arguments later constructed—independently—by Julian Simon (1981), who saw human beings as the 'ultimate resource', and an increase in population as the best way to secure the technological advances necessary to solve the problems of scarcity and pollution—a theory Simon put to the test in his now-infamous bet with Paul Ehrlich (Sabin, 2013).

Hotelling even expressed a preference for "taxation or regulation" over "absolute prohibitions" (1931, p. 138), pre-empting the introduction of carbon tax and progressive efficiency regulations over an outright ban on fossil fuels. He presented these points as uncontroversial, and spent little time discussing them. He did not refer to other authors or debates—these were just the salient issues as they occurred to him at the time.

This is generally regarded as the first study of its kind (Devarajan and Fisher, 1981), and formed the basis of what would eventually become 'exhaustible resource economics' (Gordon, 2009). It would be another forty years before anyone of the same intellectual bent would turn to the problem of pollution, and they—the OECD Environment Committee—came to the same broad conclusion (see Bernstein, 2001, ch. 2). The outcome was not inevitable in any universal sense, if the economic discourse practiced by Hotelling had been in conflict then it could have turned out differently; but the discourse was not in conflict—not in a way that it took seriously—and so the conclusion did not change: Problems with the over-use of resources? Price them into the market.

The case of Hotelling requires a few caveats, so as not to overstate its broader significance. Hotelling is not the 'origin' of the Polluter-Pays Principle, nor of neo-liberal environmentalism more broadly; he merely looked at a similar problem through a similar lens, and consequently arrived at a similar conclusion. Hotelling could not have been talking about environmental Malthusianism, nor sustainable development, nor even modern environmentalism, because none of those things existed when he wrote his article. He was responding to conservationists on the specific issue of exhaustible resources; not the splendour of nature, nor the human condition, but the management of resources in a finite space. His ontology was pre-ecological; if fish stocks were depleted, they would recover; if population rose, it would be pushed back down. He did not mention pollution; only resources. For these reasons it would be wrong to equate Hotelling's study in every respect with the work of the OECD forty years later, or to infer a causal relationship between the two. The significance of Hotelling's work is in the discursive formation it reveals, and the effect of that discursive formation on the intellectual history of ecological modernisation.

7.4   The political context of ecological modernisation

It is of no small import that the collapse of environmental Malthusianism and the decline of Keynesianism occurred at roughly the same time. It creates two compelling possibilities for the establishment of ecological modernisation: one being the *rise of feminism* outlined in chapter 2 (§ 2.1.4); the other being the rise of neo-liberalism and a new mode of government that prefers to govern 'at a distance' rather than intervening directly in people's lives. This is closely related to what I have labelled the '*political will*' narrative (§ 2.1.2). In the *political will* narrative, the rise of neo-liberalism as a political philosophy is intimately entwined with the rise of the New Right as a political force. Thus, to the extent that the New Right may have dominated the political sphere at the time, one must also acknowledge neo-liberalism as, in large part, the knowledge broker of the New Right's environmental discourse (2013).

My own analysis places the *rise of feminism* as the catalyst for Malthusianism's demise, but this cannot fully account for the rise of ecological modernisation. As noted at the beginning of this chapter, there was a three-stage process: the fall of environmental Malthusianism, the vacuum it left, then ecological modernisation's entry into the vacuum. In this sense there was a sequence of events in which these two narratives—the *rise of feminism* and *political will*—played out in different ways, affecting different stages of the process. The *rise of feminism* was responsible for the fall of environmental Malthusianism, but the vacuum it left was shaped by the political context of the time, which was the result of *political will*. The suitability of ecological modernisation to fill the vacuum was predicated upon its compatibility with those politics. In this way, the success of ecological modernisation was, to a large extent, a result of the *political will* of the New Right. The *rise of feminism* created the vacuum; *political will* set the conditions for filling the vacuum.

Even in terms of Malthusianism's collapse, the *political will* narrative is not without merit. I have singled out the role of feminism as decisive, but I do so full in the knowledge that governments take action and actions have consequences. The rise of neo-liberalism as a mode of governmental rationality has undoubtedly produced significant and lasting effects on the politics of the environment. My analysis of environmental Malthusianism is based on the discursive practice of the environmental Malthusians themselves, who, through their words and actions, deemed feminism to be the cause of their own capitulation and re-invention. But that is not to say it was the only cause;

feminism may have tied Malthusianism to the tracks, but neo-liberalism was driving the train.

The purpose of this discussion is not whether this or that narrative is the 'correct' one. Rather, I wish to explore the relationship between these two sets of events, which occurred at the same time, in the same places, and cut across many of the same objects of knowledge. I shall attempt to walk a knife edge between two statements that might, at first glance, seem contradictory: first, that ecological modernisation is not neo-liberalism; and second, that neo-liberalism is the *sine qua non* of ecological modernisation. The existing literature shows that the suitability of ecological modernisation as the successor to environmental Malthusianism was greatly enhanced by its affinity with neo-liberal governmental rationality, but that ecological modernisation has pursued a separate political agenda (Christoff, 1996; Hajer, 1995; Mol, 2001; Mol and Spaargaren, 2000); what is less clear from the literature, and what I shall argue here, is that the conditions of possibility for ecological modernisation were established through earlier developments in environmentalist thought, which were themselves a direct result of the knowledge formation now known as neo-liberalism.

7.4.1   Ecological modernisation is not neo-liberalism

The relationship between ecological modernisation and neo-liberalism is characterised by interaction and affinity. From the outset, ecological modernisation has interacted with the nascent governmental practices of neo-liberalism, attempting to harness the power of market design to govern environmental outcomes. This was most pronounced at the beginning of the 1980s in ecological modernisation's first incarnation, which Mol describes as "a very optimistic, perhaps naive, attitude toward market actors and market dynamics in environmental reforms" (2001, p. 57). But rather than display a blind faith in markets, ecological modernisation theory identified the failure of a purely market-based environmentalism, and quickly moved on the next phase, taking "a more balanced view of state and market dynamics in ecological transformation processes" (*ibid.*, p. 58).

While ecological modernisation's success is no doubt partly due to its affinity with neo-liberalism, it is certainly not a neo-liberal philosophy or instrument. Fundamentally, neo-liberal political philosophy regards the market as the ultimate arbiter of what society 'should' be like (Mirowski, 2009). The government, or governing authority, is to take its cues from the price signals and revealed preferences that emerge

from market interactions. Government is not supposed to intervene in the market by favouring one producer, or consumer, over another; the only intervention from government should be to implement and facilitate the smooth functioning of the market. As far as neo-liberalism is concerned, there is no environmental problem beyond that which market actors consider to be a problem. If the people who live in the environment think that the environment *should* be protected then they will make decisions and take actions toward that end. If the market decides not to protect the environment, then it *should not* be protected (Bhagwati, 1993; Hayek, 1945).

This is the fundamental normative difference between neo-liberalism and ecological modernisation. Ecological modernisation begins with the premise that the environment *should* be protected. It does not require the normative function of the market to determine legitimacy of such a stance—it has the transcendental foundations of modernity for that: science provides robust knowledge of the problem, reason dictates that the problem must be solved, rationality provides the tools to solve it. With these beliefs in place, the only normative question is *how* the environment should be protected.

Ecological modernisation breaks the fundamental rule of neo-liberal political philosophy. Its *raison d'être* is to alter how producers produce and what consumers consume. It has a desired market outcome in mind from the outset, and seeks ways achieve that outcome. It openly relies upon scientific knowledge and technical expertise—rather than the market—to make decisions about desired environmental outcomes, and would happily deploy strong regulation to govern the behaviour of producers. In short, ecological modernisation is willing to use the State to defy markets rather than to enable them. But that is not to say that ecological modernisation is against neo-liberalism. The first incarnation of ecological modernisation keenly experimented with neo-liberal techniques—which in later iterations were unceremoniously abandoned. The purpose was not to implement neo-liberalism itself, but to find the most effective way of achieving the desired environmental outcomes within the rubric of liberal economic orthodoxy.

The ease with which the two shared an affinity, however, demonstrates the distance between ecological modernisation and other more radical forms of environmentalism, in which capitalism itself is viewed as the centre of the problem. The radical environmentalism of the 1970s was at odds with neo-liberalism in a broad-ranging battle of ideas (*cf.* Beckerman, 1974; Simon, 1981). In many ways, the neo-liberal critique of environmentalism clung to the original reflex that ecology and modernity were

incompatible, and so environmentalism must be belittled and discredited. But the debates of the late 1970s were a little more sophisticated, displaying what Dryzek (2005) refers to as the 'Promethean' discourse on the environment.

Prometheanism is based on an ontology of value. It holds that value is not *extracted* from natural resources; value is *created* by people, who transform nature into useful or desirable things. The implication is that it does not matter if we can no longer use a certain material or technique; we will create another way to satisfy our desires. It also implies that economic growth can continue indefinitely, despite the finitude of the Earth, because value is created, not extracted from materials. Prometheans extended their faith in human ingenuity to argue that environments could be protected, pollution cleaned, alternatives developed, if only people were free to engineer it. There were instances of denial—Simon denied the existence of climate change for a remarkably long time (Myers and Simon, 1994)—but neo-liberal environmentalism was characterised more by boundless technological optimism, and staunch political liberalism.

Neo-liberalism's initial rejection of environmentalism was a resistive act, against the radical environmentalist discourse of the late 1970s. The modern environmental movement, dominated by environmental Malthusianism, wanted to smash everything and replace it with a new economic and political order that was, to use Foucault's terminology, a 'disciplinary' order—a normative order, which knew what it wanted you to be, and would do whatever it took to make you that way. Foucault described neo-liberalism as a rejection of disciplinary power, a new mode of governing which sought to govern without the splint of normalisation (2008). In this respect, neo-liberal environmentalism was a rejection of a *mode* of governance rather than its *motive*. Neo-liberalism tried to develop a philosophy of environmental governance, evident in the thought experiments of Simon (1981) and Beckerman (1974), but it was a young enterprise, 'understaffed and underfunded' as it were, and completely incapable of governmentalizing the ecological problematisation against the tide of the environmental movement.

Ecological modernisation clearly has a great deal in common with neo-liberal environmentalism, but this is not a function of 'being neo-liberal', it is merely the result of seeking solutions from within the broader institutional structures of modernity. When caught within a system that demands economic growth, one must find ways to grow without transgressing ecological limits. It follows that one must find technological solutions, find fungible materials, find new products and processes to satisfy both

competing sets of demands. It does not mean that ecological modernisation is ideologically wed to those outcomes; only that it is pragmatically led to a similar conclusion. The major difference, in this respect, is that ecological modernisation is not in denial about the ecological problematisation. It does not need to substitute the fantasy of non-existence for problems that cannot be solved from within the neo-liberal rubric. When markets fail to govern pollution, ecological modernisation has other options.

7.4.2   Neo-liberalism is the *sine qua non* of ecological modernisation

The history of neo-liberalism has been covered in great detail in the existing literature (Burgin, 2012; Davies, 2014; Foucault, 2008; Mirowski and Plehwe, 2009; Peck, 2010; Stedman Jones, 2012), which I have no wish to recount in full. Rather, I would like to pull on a single thread, artfully stitched by Foucault, which lays out the difference between the neo-liberal approach to government, and that which went before. Foucault's analysis of neo-liberalism spans two lecture series, beginning with the intellectual foundations of 20th century governmental rationality in *Security, territory, population* (2007), and ending with the real world manifestation of that rationality in the form of neo-liberalism in *The birth of biopolitics* (2008). Foucault's analysis amounts to what Tribe (2009a) describes as 'the political economy of modernity', and it is this view of modernity I wish to bring to the fore in my consideration of ecological modernisation.

To begin, Foucault invokes a distinction between two modes of the exercise of power: disciplinary power, and bio-power. I have provided a short overview of each in chapter 3 (§ 3.6.3), and a full treatment can be found in Foucault's *Discipline and punish* (1977) and *History of sexuality, vol. 1* (1978), respectively, but for the purposes of this discussion, I will focus on the way each mode of power treats the role of normativity and the practices of normalisation[8], so as to contextualise neo-liberalism in the history of political thought, and thus its relationship to ecological modernisation.

Disciplinary power can be thought of as the instrumentalisation of normativity. It is a direct intervention at the site of the body; an 'anatomo-politics' intended to shape and cajole the individual to conform to a pre-conceived ideal. The techniques of discipline are characterised by this relation of power, wherein the knowledge possessed by experts is

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[8] Foucault uses two terms: 'normation' and 'normalisation' (2007, ch. 3), to distinguish between disciplinary and other forms of normalisation. Such a distinction is unnecessary in this instance. For clarity and simplicity, I use 'normalisation' in a generic sense.

used to define the ideal and develop methods of correction, and the authority of governing institutions is deployed to legitimate the primacy of expertise and to impose their corrective techniques—by force if necessary. In short, disciplinary power is a 'we know best' form of norm creation, and a 'whether you like it or not' approach to normalisation.

Bio-power reconceptualises normativity, not as an ideal of perfection, but as an acceptable range; an outer limit, rather than a central target. It operates at the level of populations—or the entire species—rather than individuals, and as such, its knowledge is made of statistics rather than case studies. This 'bio-politics' of the population is concerned not with the deviancies of individual bodies, but with the murmuration of the swarm, its inputs and outputs, tallies and trends. Its approach to normalisation is not to intervene at the level of the individual, but to govern around the edges, facilitating the whims of those within the acceptable range; impeding those who fall without. In Foucault's analysis, neo-liberalism is an attempt to forge an anti-disciplinary mode of governance, which ends up exercising bio-power instead.

The claim of neo-liberals themselves is that neo-liberalism is precisely not a normalising force. The central thesis of Hayek's (1945) exhortation of the market, for example, is that people know better than the State, and the market can collate that knowledge better than any expert. In other words, norms are allowed to emerge from below, not be imposed from above. This basic belief is what sets neo-liberalism apart from its classical forebear. Classical liberalism had a vision of what society should be like—a place of economic liberty, of *laissez-faire*—and wished to use the power of the State to bring it about. It urged political liberalism, for the purpose of economic liberty. Neo-liberalism inverts this relationship. It does not presume to know what the outcome of a liberal society should be. Economic liberty is not the end; it is the means. Neo-liberalism urges economic liberalism for the purpose of political liberty, the power of the State being redirected toward the facilitation of a higher knowledge, distilled by carefully designed markets (Tribe, 2009b). But in Foucault's analysis, the lofty intentions of neo-liberals—if indeed those are their intentions—merely shift the site of normalisation onto a different vector; still fully intent on shaping society, but done so out of sight, around the edges, at a distance: "action is brought to bear on the rules of the game rather than on the players" (Foucault, 2008, p. 260).

This basic attitude toward the role of government—to facilitate, rather than dictate—is what characterises neo-liberal governance in all areas of society. It is the credo of both classical and neo- liberalism that 'one always governs too much', which is to say

that, while government is necessary, one must always strive to reduce it. The difference between classical and neo- liberalism is the thing being facilitated: to classical liberals it was the exchange of commodities; to neo-liberals it is mechanisms of competition. "The *homo œconomicus* sought after", says Foucault, "is not the man of exchange or man the consumer; he is the man of enterprise and production" (*ibid.*, p. 147). The society sought by neo-liberalism is not *laissez-faire*, nor even the 'market society' denounced by Marx; it is a social order regulated by the mechanisms of competition. The role of neo-liberal government is to facilitate those mechanisms.

This is the political context in which ecological modernisation was forged. As argued above, the conditions of possibility for ecological modernisation were instigated by the creation of the Polluter-Pays Principle, which sought to price pollution into the market. The purpose of pricing it into the market was to enable the mechanisms of competition to perform the role of government. There were other options available—regulation, prohibition, investment in alternatives—but the mechanisms of competition were deemed by the OECD to be the most effective and—perhaps more importantly—the least disruptive of society's existing institutional and economic configurations. The moment environmental governance was integrated into the mechanisms of competition, a new environmentalism was born, and the possibility of market-compatible environmentalism[s] paved the way for ecological modernisation.

As noted above, it was only the first iteration of ecological modernisation in the early 1980s that could truly be described as a form 'neo-liberal environmentalism'. For most of its existence, including up to the present, ecological modernisation has been marked by affinity and interaction with neo-liberalism, not interchangeability. Ecological modernisation is still open to neo-liberal forms of environmental governance, but is not bound by them. One example of this is the system of tradable permits aimed at internalising the cost of greenhouse gas emissions, known as carbon trading. This particular instance of environmental governance has been identified by Mirowski (2013, ch. 6) as the architype of neo-liberal market design, deploying the mechanisms of competition to regulate and govern the problem of climate change. As with the Polluter-Pays Principle, its effectiveness is debatable, but to ecological modernisation, this is not the full extent of environmental governance, only one string to its bow. Neo-liberalism was the *sine qua non* of an alternative environmentalism; ecological modernisation has long since out-grown it.

7.5   Ecological modernisation and the genealogy of sustainability

Genealogy is the diagnosis of the present. Specifically, those aspects of the present which make it distinct from the past, revealing the unique qualities of our historical conjuncture. Ecological modernisation holds a special place in this diagnosis, because it is—for the moment at least—the 'terminal form' of environmental politics, which is to say, it is what we have ended up with as a result of the 'accidents, minute deviations, complete reversals, errors, false appraisals, and faulty calculations' that went before. Knowing what is different about ecological modernisation compared with what preceded it, knowing the discontinuities that mark it out from all else, is the first step in the diagnosis of the present.

For this genealogy there are two fundamental discontinuities, between which my analysis oscillates. The first was the starting point of my research; the discontinuity between environmental Malthusianism and ecological modernisation. Ecological modernisation is the present, and I worked backwards and outwards through the genealogy to understand what went before and how it unfolded. This led me to trace environmental Malthusianism all the way back to its emergence—and to a deeper discontinuity. This second discontinuity is fundamental to the genealogy of sustainability as a whole; it is the birth of ecology. As discussed alongside the emergence of environmental Malthusianism in chapter 4 (§ 4.2), the birth of ecology brought with it an entirely new ontology of nature, and consequently an entirely new way of problematising humanity's relationship with it. The ecological problematisation is the basis of contemporary sustainability. It created an existential crisis built on the very real possibility that humanity might bring about its own demise. Every historical turn directed toward sustainability has since been underpinned by that same ecological problematisation, leading all the way up to ecological modernisation.

As discussed across chapters 4, 5, and 6, the first political reaction to the ecological problematisation was environmental Malthusianism. In its first incarnation, *circa* 1948, environmental Malthusianism began as an extension of existing neo-Malthusian and eugenic modes of governmental rationality, but the eugenic element was by then already in decline, its biological elitism giving way to the politics of biological universalism—a rejection of the racism, sexism, and classism of a bygone age. This second-generation environmental Malthusianism, *circa* 1968, set itself in opposition to the biological elitism of eugenics. This form of environmental Malthusianism became synonymous with the modern environmental movement, and would dominate

environmental political discourse for the next two decades. But it had a fundamental flaw—a flaw inherent to all Malthusianisms; it was founded upon a relation of power over women. As feminist critique caught up with environmental Malthusianism, the very conceptualisation of the population problem was turned on its head. No longer was population growth the *cause* of society's ills; population growth was merely an *effect*, which could be ameliorated by improving the lives of women. Malthusianism had lost its prevailing conception of population, and its relation of power over women. It collapsed as a political force, and environmental Malthusianism collapsed with it, leaving a vacuum in environmental politics.

Parallel to the development of environmental Malthusianism the nascent political philosophy of neo-liberalism was steadily growing, infecting and inflecting the institutions of modernity. For the most part, the birth of neo-liberalism and the birth of ecology were unrelated—though they did occur around the same time and in the same places. There is some suggestion that neo-liberalism borrowed some of its basic principles from ecology (Walker and Cooper, 2011), or at least received them second-hand via the field of 'cybernetics' (Mirowski, 2002). But by the time of its encounter with the ecological problematisation, *circa* 1970, neo-liberalism could not be said to be 'ecological' in any meaningful sense. The two spaces were separated by an ideological divide. Responses to the ecological problematisation were distinctly radical in their politics, whereas the rise of neo-liberalism occurred within the institutions of modernity—quietly, and without fanfare. Neo-liberalism created the conditions of possibility for ecological modernisation. It did not cause ecological modernisation to rise, and ecological modernisation itself is not 'neo-liberal'; rather, the political context created by neo-liberalism meant that when the crisis in environmental politics was precipitated by the fall of environmental Malthusianism, ecological modernisation was ready, willing, and able to fill the vacuum.

Feminism did not act on behalf of ecological modernisation. It was an accidental consequence of a separate trajectory; part of the three-stage process: collapse, then vacuum, then change. The fundamental relation of power at the core of environmental Malthusianism—of all Malthusianisms—was the power over women, and it could not continue under a feminist polity. The *rise of feminism* meant the collapse of Malthusianism—and with it, the vacuum in environmental politics. Likewise, neo-liberalism did not precipitate the fall of environmental Malthusianism—as the *political will* narrative might suggest. The role of *political will* was to create the conditions of

possibility for ecological modernisation after the fall of environmental Malthusianism. The crisis in environmental Malthusianism gave ecological modernisation the toehold it needed to enter into conflict with the established discourses of environmental politics and stake its claim as a serious and legitimate form of environmentalism. That was the sequence of events: the *rise of feminism*; the fall of environmental Malthusianism; the vacuum in environmental politics shaped by *political will*; and the rise of ecological modernisation.

In the genealogy of sustainability, ecological modernisation is one of the keystones of the present. Its descent can be traced from the emergence of ecology, through the decline of biological elitism, to the consequent *rise of feminism* and ultimate collapse of Malthusianism. These are not the only events in the genealogy of sustainability, but they are the accidents of history that gave voice to the problems, sparked the conflicts, altered the course, and created the conditions necessary for the unforeseen and unpredictable rise of ecological modernisation—a single thread in the history of the present.

8

Conclusion

The starting point of my investigation was the discontinuity between environmental Malthusianism and ecological modernisation. In order to establish the conditions of this discontinuity, I traced the descent of environmental Malthusianism all the way back to the emergence of 'ecology' as a distinct discursive formation. The consequence—and significance—of ecology was the conceptualisation of 'the' environment as a single ontological object, and the subsequent problematisation of humanity's relationship with it. This was different from previous environmental problematisations, which were either romantic lamentations of the destruction of beauty, or pragmatic instrumentalist concerns over the scarcity of space and resources. The new ecological ontology re-positioned humanity within nature and the cosmos, and opened up the very real possibility that the human species could bring about its own extinction.

The first expression of this problematisation was a medley of the old and new. The existing intellectual context was steeped in Malthusianism and eugenics— themselves a wellspring of problematisation—and these existing knowledge forms took onboard the newly hatched ecological discourse, resulting in the first generation of environmental Malthusianism. This first expression was short lived, however, as the biological elitism inherent to eugenics was already falling out of favour—both with a younger generation of environmentalists, and with international politics more broadly, which was moving away from colonialism and imperialism, toward inclusion and development. The result was a second-generation environmental Malthusianism, which tried to distance itself from biological elitism, and instead advance a politics of biological universalism.

These two events—the birth of ecology and the decline of biological elitism— chart the descent not only of environmental Malthusianism, but of sustainability as a whole. Whilst others have found traces of sustainability much earlier than the 20th century (Caradonna, 2014; Chappells and Trentmann, 2015; Grober, 2012; Warde, 2011), I would

argue that those were instances of something else; a form of resource management. To take a common example, the 18th century forester Hans Carl von Carlowitz (1732) may have used the language of 'sustained-yield' when planning the long term management of forests under his charge, but he could not have engaged in the problematisations that mark 21st century sustainability, because he did not have the specific knowledge forms—the global ecological ontology—with which to problematise it. The thing that we call 'sustainability' is not simply resource management for local industry; it is an existential mode of self-reflection which operates at the species level. In sustainability, what is at stake is more than wealth, or comfort, or an economic system; it is the continued existence of the human species.

The discontinuity between environmental Malthusianism and ecological modernisation is by no means the sum total of sustainability's genealogy, but it does offer a unique insight into the vicissitudes of history that made sustainability what it is today. The birth of ecology, which made possible a specifically environmental form of Malthusianism, also set out the basic problematisation that forced the project of modernity into conflict with itself. The industrialisation of the global economy, increased production and lowered costs, boundless consumption and comfort for everyone—driven by the capitalist organisation of society and endless economic growth—were all brought into question. The global ecological ontology shone a spotlight on the limits and lacunas of what was meant to be our rightful place in the long march of progress. Sustainability is the manifestation of this conflict.

Likewise, where the rejection of biological elitism transformed environmental Malthusianism from within, it also affected the trajectory of sustainability across the global political landscape. Take, for example, the concept of 'sustainable development'— the history of which is discussed in chapter 2 (§ 2.1.3) as part of the *political impossibility* narrative. Sustainable development emerged out of the conflict between environment and development, which first played out publicly on the stage of the Stockholm Conference in 1972. When the conference was first proposed in 1968, it was intended as a debate about humanity's impact on the environment and what should be done about it. After circulating within the forum of the United Nations, however, environmentalist concerns came into direct conflict with the project of international development. Seemingly all of the solutions to environmental problems would involve a slowdown of development— something most countries, containing most of the human race, would rather speed up. The

Stockholm conference was immediately transformed into an attempt to resolve the conflict between environment and development.

What this historical *precis* reveals is the role—or lack—of biological elitism in the discourse of sustainable development. Under the biologically elitist worldview, the plight of developing nations carried very little weight. Not just in terms of white supremacism, but due to the broader eugenic belief that nations, races, and cultures achieved their potential by inherent capability, and if others deserved success, they would achieve it by their own grit. To see how biological elitists would have resolved the conflict between environment and development, one need only look to the first-generation environmental Malthusians, whom advocated a system of 'triage' for developing populations—welcoming the strong, helping the wounded, and leaving the weak to their fate (Hardin, 1974; Paddock and Paddock, 1967). This is in sharp contrast to the biologically universalist worldview, in which every nation and every human deserves an equal crack at the whip. At the United Nations, the vast programme of international development was beyond reproach. The automatic response of a discourse that rejects biological elitism is to seek an equitable resolution to conflict; in the conflict between environment and development, that solution took the form of sustainable development. The rejection of biological elitism played an instrumental role in the history of sustainability. Without it, things could have turned out very differently.

The same rejection of biological elitism also precipitated the collapse of Malthusianism as an effective political force. Biological elitism is not just about racism; it is the imposition of a social hierarchy based on immutable genetic characteristics. To the eugenicists and neo-Malthusians of the early 20th century, this included people of the same race, but of a lower social class—a common belief being that the privileges enjoyed by the middle classes and aristocracy were inherited genetically as well as socially. It also extended to differences between the sexes. Biologists of that same period assumed that women were inferior to men in both physical strength and intelligence—not because of social conditioning and repression, but because of biology. Sexism was not the only tenet of biological elitism to receive criticism in the latter half of the 20th century—civil rights and trade union movements also rejected the excuse of biological determinism—but it was the feminist critique that ultimately transformed the population problem, and effectively rendered environmental Malthusianism obsolete. By the time environmental Malthusian discourse adapted to its new reality, it was too late; environmental politics was infatuated with a new discourse: ecological modernisation.

This too has fundamental repercussions for the shape of sustainability as a whole. The shift from environmental Malthusianism to ecological modernisation undoubtedly affected the practices of sustainability—both discursive and non-discursive—and ecological modernisation has been at the forefront ever since. But there is another story to be told, about the wider political context into which ecological modernisation emerged, and the conditions of possibility that foreshadowed it. There is broad agreement across the literature that a three-stage process occurred: the fall of Malthusianism, the vacuum in environmental politics it left behind, and the rise of ecological modernisation to fill the vacuum. But while the *rise of feminism* can account for the fall of environmental Malthusianism, it cannot account for the rise of ecological modernisation—nor can it tell us much about the vacuum it caused in environmental politics.

As discussed in chapter 2 (§ 2.1.2), many scholars believe that the *political will* of the New Right at the end of the 1970s—and the neo-liberal philosophy that accompanied it—was responsible for both the fall of environmental Malthusianism and the rise of ecological modernisation. My own analysis suggests that the *rise of feminism* was the definitive factor in the fall of Malthusianism, but the rise of ecological modernisation requires further explanation. In order to fill the vacuum left by the fall of environmental Malthusianism, ecological modernisation had to be suitably qualified. It had to be sufficiently different from environmental Malthusianism so as not to be associated with its toxic legacy; it had to be sufficiently developed—in theory at least—to inspire confidence among those in the environmental movement who were looking for a new discursive home; and it had to be sufficiently compatible with the political context of the time, which was dominated by the philosophies of neo-liberalism.

That ecological modernisation was sufficiently different is plain to see. It was agnostic on the issue of population, and did not seek to overturn capitalism or end economic growth—nor did it suffer from the power relation that unseated Malthusianism in the first place. It was sufficiently developed in the sense that its basic principles had been circulating between policymakers and think tanks throughout the 1970s, far from the public discourse of radical environmentalism. And it was compatible with the political context of the time, in that it shared an affinity with neo-liberalism.

The relationship between ecological modernisation and neo-liberalism is not straight forward. Whilst early incarnations ecological modernisation flirted with neo-liberal techniques of governance—the use of market mechanisms—it was only on the proviso that those techniques would produce positive environmental outcomes. When

those techniques failed, ecological modernisation diversified, and neo-liberalism became just one string to its bow. The crucial point at this stage is that they were compatible; they could be allies, not enemies. But the point I wish to emphasise is not the relationship ecological modernisation had with neo-liberalism *after* its emergence; it is the relationship they share across time, that shaped the vacuum *before* ecological modernisation arose to fill it. Ecological modernisation is not neo-liberalism; but neo-liberalism was the *sine qua non* of ecological modernisation. Which is to say, neo-liberalism created the conditions of possibility.

The history of neo-liberalism goes back to the early the 20th century, but its encounters with ecology began more recently (Coase, 1960), and the specific encounter I am interested in occurred more recently still (OECD, 1971). At roughly the same time as—though independently of—the Stockholm Conference, the newly formed OECD Environment Committee were hard at work on the integration of environmental limits with the market economy. The Committee designed a legal instrument called the Polluter-Pays Principle, and in doing so flicked a switch, illuminating the way to a kind of environmentalism that was fully integrated with the existing institutions of modernity.

The Polluter-Pays Principle had another notable feature: it was the first operational example of neo-liberal environmentalism. The Polluter-Pays Principle was, on the surface, an attempt to allocate the costs of pollution among the polluters themselves, so as to incentivise cleaner production. But beneath the surface, it was an attempt to govern the environment using the mechanisms of competition inherent to markets—a distinctly neo-liberal mode of governance. This neo-liberal encounter with environmentalism was the first step in making ecological modernisation thinkable.

When the *rise of feminism* precipitated the fall of environmental Malthusianism, it did not act on behalf of ecological modernisation; it merely created the vacuum. The form of the vacuum was determined by the political context of the time; it was a neo-liberal shaped hole that demanded a neo-liberal shaped peg to fill it. Ecological modernisation may not have turned out to be entirely neo-liberal, but the affinity between the two was sufficient to determine the outcome. Likewise, neo-liberalism did not cause ecological modernisation to rise; when environmental Malthusianism fell, and the vacuum was formed, ecological modernisation was ready to fill it. The *rise of feminism*; the fall of environmental Malthusianism; the vacuum in environmental politics; the context of *political will*; the rise of ecological modernisation. This sequence of events explains the change from environmental Malthusianism to ecological modernisation.

Conspicuously absent from this account is the role of the first narrative described in chapter 2 (§ 2.1.1): the *advance of knowledge*. This is not a rejection of the narrative as an explanation of change; rather, it is a recasting of the narrative, in light of the unique role that knowledge plays in Foucauldian genealogy. The *political impossibility* narrative recounts the early ecological problematisation of development, and charts a sustainability that grew in the absence of biological elitism; the *rise of feminism* narrative accounts for the fall of environmental Malthusianism, creating a vacuum in environmental politics; and the *political will* narrative accounts for the form of the vacuum—the political context—into which ecological modernisation was welcomed. Knowledge is at work in all of these instances, but it is not specifically an *advance* of knowledge—a teleological march toward enlightenment—it is the *exercise* of knowledge, inseparable from the exercise of power.

Knowledge alone is not enough to produce political change. Even the scientific method—that most overwhelming discursive meta-practice—does not by itself alter governmental rationality. In order for knowledge to affect governmental rationality, it must be brought into the field of government. This means, firstly, undergoing a kind of *translation*, so that the new knowledge becomes compatible with the pre-existing forms of knowledge that already underpin the governmental rationality—which in recent times has meant political economy and economics. Secondly, it means some level of *normative alignment*, included in or implied by the new knowledge form, which aligns with the pre-existing normative basis of the governmental rationality—normative values involving individual liberty, democracy, health, family life and so on. Lastly, it means at least one, preferably more than one, *tangible benefit* to the pre-existing purposes of the intuitions and practices resulting from the governmental rationality—economic growth for example, or job creation, or even just re-election for the incumbent polity (similar points are made by Dryzek *et al.*, 2009).

The radical expression of the modern environmental movement did not acknowledge any of this. The political reflex of environmentalists in response to the warnings of environmental science was to say 'stop'. Stop growth, stop industry, stop development, stop capitalism—stop breeding. Stop everything that society is set up to do and that the practices of government are designed to advance. There was little attempt on the radical environmentalists' part to translate the ecological problematisation into the language of political economy and economics, other than to denigrate and diminish those knowledge forms as the cause of the apocalypse. Pre-existing normative values were

turned into failures rather than successes; too much liberty [selfish], too much democracy [ignorant], too much health [old], too much family [people]. And while the changes sought by the environmentalist reflex were intended to benefit everyone under the Sun, they directly contradicted the economic growth, job creation, and consequent re-election, that the practices of government existed to reproduce. There was little attempt, nor even desire, to bring environmentalism 'into the field' of government; the radical expression of the modern environmental movement was an attempted revolution—and it failed.

The counteragent to the radical expression was a loosely associated set of discursive and non-discursive practices that fall under the broad banner of ecological modernisation. This really was brought into the field of government, speaking to and from within the corridors of power. It used the language of economics and political economy, promoting the normative ideals of liberty and democracy, leaving open the pursuit of health, wealth, and family life. It was completely onboard with the continuation of economic growth and the creation of new jobs—preferably in new environmentally friendly industries. Ecological modernisation was expressed from the minds of people who spoke the language of both environmentalism and government, who had cut their political teeth by avoiding radical language, but still looking for opportunities to integrate environmentalism into governmental rationality.

From the radical environmentalists' perspective—from outside the field of government—the outcomes of ecological modernisation range from a few small successes to an unmitigated disaster. Despite early gains in efficiency and substitution, global carbon emissions have continued to grow, as has industrial production and its concomitant pollution (Bailey *et al.*, 2011). Efficiency gains are swallowed up by the 'Jevons paradox' (Jevons, 1865), and environmentalism as a whole has been co-opted by the very economic system that supposedly caused the problem in the first place, reduced to a facade of greenwashing, political soundbites, and ineffectual policies (Blühdorn, 2000).

There is, however, another way to look at it. Environmentalism is not a zero-sum game. The translation of environmentalism into the language of government did not destroy radical environmentalism; those environmentalists still exist and are still radical. Ecological modernisation is an additional form of environmentalism, which creates additional change without affecting the ability of radical environmentalists to engage in activism. Ecological modernisation does not close down the opportunity for radical action, because radical action necessarily exists outside of the field of government. It is a

foil, a counterpoint, an interlocutor that gathers support and affects change by virtue of its oppositional status. But ecological modernisation has achieved something that radicals—by definition—can never achieve: it has enabled environmentalism to become a dominant discourse. Even if effective action on global environmental problems is yet to catch up with the discourse, it is now considered fringe to speak against environmental considerations. While this is not concrete action in and of itself, it does constitute a change in the conditions of possibility, and it is new conditions of possibility from which new practices emerge.

8.1   Original contributions to knowledge

There is more than one original contribution resulting from this research, but since it centres on the discontinuity between environmental Malthusianism and ecological modernisation, I would deem the central contribution to be the underappreciated effects of feminism on the history of environmentalist thought. As demonstrated in chapter 2 (§ 2.1.4), the extent to which the *rise of feminism* features in the explanations of change ranges from the peripheral to the non-existent in all but two of the works reviewed (*cf.* Connelly, 2008; Halfon, 2007). There could be a number of reasons for this. It might be the indirect nature of the relationship; that there was a chain of events initiated by the *rise of feminism* elsewhere, which ended up, inadvertently, producing such a monumental change in the politics of the environment. Or it might be the profusion of 'eco-feminism' throughout the environmentalist literature, overshadowing other intersections of feminist and environmentalist thought. Or it could simply be the force of the other available arguments—*political will*, *political impossibility*, and the *advance of knowledge*—that diverted attention away from the *rise of feminism*.

    If focussed squarely upon the newly emergent phenomenon of ecological modernisation, one could be forgiven for thinking that the politics with which it had such an affinity—neo-liberalism and the *political will* of the New Right—was also the cause of its ascendancy. Only by looking outwards and backwards to the context and history of its emergence—using the analytics of Foucauldian genealogy—was it possible for me to trace the chain of events back to the fundamental relation of power between Malthusians and women. The success of the *rise of feminism* in reversing that relation of power led to

the collapse of Malthusianism and the vacuum in environmental politics; the role of *political will* was secondary to, and contingent upon, this event.

I would, however, also draw attention to two further historical contingencies identified in this research, which outline the genealogy of sustainability as a whole: first, the birth of ecology; and second, the rejection of biological elitism. It may seem axiomatic to state that ecology is an essential element in the history of sustainability, but its significance is obscured by its ubiquity. It is difficult to imagine a concept of nature that is not ecological, or to think of environmentalism without any conception of 'the' environment. But these are relatively new concepts, created in the early 20th century, and it was the creation of these concepts—along with the ecosystem and the biosphere—that gave us the ability to problematise society in such a way that we would end up here, in the 21st century, worrying about sustainability.

Despite the importance of ecology to the broad concept of sustainability, it is still contentious for me to suggest that the birth of ecology signalled sustainability's emergence. As outlined above, there are those who would place such an event at least as far as back as the 18th century. But I am confident in my arguments; sustainability is a planetary, species-wide, existential crisis predicated on the ecological problematisation of human civilisation, and it began with the birth of ecology.

The second contingency, the rejection of biological elitism, is perhaps a less obvious component of sustainability's past. It is widely understood that racism, sexism, and classism, were more prevalent, socially acceptable, and institutionally embedded in the past than they [still] are now. It may seem inconsequential that the general shift in attitudes toward diversity and inclusion—especially in the domain of international politics—is reflected in the discourse and praxis of those institutions. But the rejection of biological elitism is a perfect example of the role of historical contingency in setting the trajectory of society. First-generation environmental Malthusians made it clear for all to see what sustainability might look like if biological elitism had prevailed. A world of enforced division, the deliberate starvation of billions, the theft of resources and annexing of arable land, all for the benefit of a chosen few. Things could have been very different.

But there is one more effect of the rejection of biological elitism that runs right through this story. The discrimination against people who happen to be women is also a form of biological elitism. It led to the *rise of feminism*, to the instatement of women in positions of influence and authority, to the consideration of women's experiences and opinions on matters that affected their lives. The reconceptualisation of the population

'problem' was a direct result of the rejection of biological elitism. It led, indirectly, to the collapse of environmental Malthusianism, and to the vacuum, and subsequently to the transformation of environmental politics. To understand sustainability is to understand these historical contingencies. If it were not for them, sustainability would be something else entirely.

Any further originality stemming from this research is in no small way due to the novel application of methods. There is no shortage of Foucauldian genealogies in the world, nor is there a lack of historiographical works on sustainability, environmentalism, or ecology. There are a range of Foucault-inspired studies on various aspects of sustainability—mostly in the form of governmentality or 'environmentality' studies—but mine is the first Foucauldian genealogy that I am aware of. I find this somewhat surprising, since genealogy lends itself to topics that are fundamental to the ways in which we think of ourselves, and sustainability is exactly that: it is the way in which we think of ourselves in relation to nature, time, and our own existence. But in writing the genealogy of sustainability, it is important not to defend or advance sustainability as a political project. Genealogy is a mode of critique, and so a genealogy of sustainability must be a critique of sustainability. This in itself is an original, contentious, and subversive act.

But the method is not the outcome, and the test of this research must be the insights, arguments, and concepts that issue from it. The fact of ecology's emergence in the early 20th century is well known (Pitt and Samson, 1999; Warde, 2016; Worster, 1994), but by viewing its emergence through Foucault's unique approach to historical problematisation, I have been able to map the effects of ecology through the way it has entered into discourse and come into conflict with established practices. The ecological problematisation is at the root of every conflict that shapes sustainability's history, and the new practices that emerge are as a direct result of these conflicts. In a general sense, ecology's importance to sustainability is beyond question; but the assertion that the birth of ecology brought sustainability into being is not. I am sure—indeed I hope—that this will attract contention, because it is a new way of understanding the constitution of sustainability.

The archaeological analysis that forms the basis of Foucauldian genealogy enables a level of insight into the construction of discourse that goes far beyond simple nominalism. With this tool at my disposal I was able to identify three generations of environmental Malthusianism, which other analyses have described as diversity within a

single object. The role of biological elitism in first-generation environmental Malthusianism, and its conspicuous absence in the second generation, showed as an anomaly in the discursive formation. Only by separating the two could the anomaly be resolved. Similarly, the role of women and the epistemology of population was radically different in third-generation environmental Malthusianism, even though it was the same people speaking, under the same banner, and for the same reasons. The difference in discursive formation was so glaring that I was forced to separate them. These insights not only led to the identification of three generations of environmental Malthusianism, but also served as anchor points for the genealogy of sustainability as a whole—the birth of ecology, the rejection of biological elitism, and the reconceptualisation of population are all important events, the true significance of which may have remained obscured without the valuable analytic tools left to us by Foucault.

8.2   Opportunities for further research

I have consciously chosen the subtitle 'toward a genealogy of sustainability', because I know that a comprehensive genealogy is beyond the scope of this single endeavour. There will always be ways to expand the genealogy, to widen its scope, or look further back in time. But having gone through the process I can see at least two immediate avenues for further research—which are related to, but not merely a repeat of, the work done here.

The first is the emergence of sustainable development and other events contained within the *political impossibility* narrative in chapter 2 (§ 2.1.3). I have discussed the conflict between environment and development, and the response of sustainable development, at various points throughout, but it was not the primary focus of the current project. It seems clear to me that this is worthy of further attention as a significant thread in the genealogy of sustainability. The question that burns most brightly, however, regards the relationship between sustainable development and ecological modernisation. As discussed in the *political impossibility* narrative, the Malthusianism that suffused environmental politics across the Global North barely registered at the United Nations, so the role of environmental Malthusianism appears minimal. But by the time sustainable development was named official policy in the 1980s, ecological modernisation was embraced as one of the key tools with which to achieve sustainability (Hajer, 1995;

WCED, 1987). The question is: what role, if any, did the United Nations play in the development, support, and promotion of ecological modernisation as an alternative to environmental Malthusianism? Or in broader terms: can we trace the descent of environmental politics in the empty spaces outside of environmental Malthusianism's reach? Foucault once claimed that "of rules and methods, I retained only one", from a poem by René Char: "I removed from things the illusion they produce to protect themselves from us, and I left them the part that they concede us" (Foucault, 2006, p. xxxv). If environmental Malthusianism is the illusion produced to protect the true story of global environmental politics, then what is hidden beneath?

The second avenue of research I have titled simply 'neo-liberal environmentalism'. The discussions throughout chapter 7 relate to the political context that made ecological modernisation possible. The chapter serves not as a complete work of research in and of itself, but as an outline of a research agenda. A cursory glance at the nexus of neo-liberalism and environmentalism reveals an overwhelmingly critical mode—by which I mean, not just critical of neo-liberal responses to environmental problems, but in the sense that the label 'neo-liberal' is deployed as form of criticism in and of itself. One notable exception to this is an insightful analysis of emissions trading schemes offered by Mirowski (2013, ch. 6). Mirowski describes how specific emissions trading schemes were developed, explains how and why they should be categorised as neo-liberal, and provides a robust critique of their intentions and shortcomings. My own research has shown that neo-liberalism plays an instrumental role in the genealogy of sustainability. Its appearances are not simply that of a pantomime villain; they are serious attempts by people with considerable resources at their disposal to find workable solutions to a problem they genuinely believe to exist. There are problems, ambiguities, and contradictions to be found throughout the philosophies of the neo-liberal 'thought collective' (Mirowski and Plehwe, 2009). But one of the main points—and great strengths—of the genealogical method is to set aside normative judgement and concentrate on tracing the descent, emergence, and formations of phenomena, and I believe that such an analysis of neo-liberal environmentalism in the past will free us to think differently about sustainability in the present.

There are many other opportunities scattered through these pages. On methodology, there is scope for an extended response to Koopman and Matza (2013) on the taxonomy of Foucauldian research; or a timely treatise on 'Foucault, genealogy, environmental history' in response to the clear demand for fresh approaches to

environmental history (Caradonna, 2015; Sörlin and Warde, 2007). Many of the insights, arguments, and concepts presented throughout the present work would bear further scrutiny—the birth of ecology, biological elitism, the three generations of environmental Malthusianism, to name but a few—and the overarching importance of historical contingency opens up a range of possibilities on the nature of historical change; if certain conflicts had gone the other way, sustainability might have turned out very differently indeed. But in terms of the expansion and continuation of the genealogy of sustainability, the emergence of sustainable development and neo-liberal environmentalism are at the top of the list, and will form the next stages of my research agenda.

8.3   Modernity is now ecological

In his seminal work on ecological modernisation, Hajer poses a question: "Is ecological modernization to be understood as the materialization of the original ideas of the environmental debate… or does it signify the collapse of critical discourse?" (1995, p. 4). The question arises out of a common criticism levelled against ecological modernisation: that it signifies the co-option of environmentalism by the establishment; that it is a fig leaf, cynically masking the real agenda of 'business as usual'. To many, the dominance of ecological modernisation in environmental politics and policymaking represents the subjugation of genuine environmentalist critique, the shutting down of alternative views, and the closing off of deliberative spaces that could have fostered a truly ecological politics.

I would reverse this critique. It was ecology that co-opted modernity. It was environmentalism that infiltrated the establishment. 'Business as usual' has been thrust into a losing battle, and is busily negotiating the terms of its surrender. Emissions standards, carbon pricing, renewables tariffs; business is in no position to reject these developments out of hand, it can only subvert and delay, search for loopholes and bend the rules. These are not the actions of a victor. Environmentalism is now a dominant discourse, and modernity is now ecological.

Coda

Sustainability is a domain of action. Its problematisations are intended to produce change. The type of scholars attracted to sustainability—myself included—are overwhelmingly idealists who wish to make the world a better place, and to direct their scholarship to that end. If we were to follow Nietzsche's genealogical mode, it would be to write 'effective' histories—a way of seeing and understanding problems in society, of learning how to identify and act upon weakness in order to derive strength. Nietzsche sought to use history as an instrument of change (Nietzsche, 1980); Foucault, however, took a different view. He was rather more coy about the uses of history. He retained the incisive use of genealogy to reveal the powers that shaped us, and went as far as stating that "since these things have been made, they can be unmade, as long as we know how it was that they were made" (Foucault and Raulet, 1998, p. 450), but he stopped short of arguing that, or how, society should be remade, leaving a normative gap for the reader to fill by themselves.

This raises the question: if critique is not meant to affect change, then what is critique for? When challenged, Foucault replied: "I don't think that people who try to decipher the truth should have to provide ethical principles or practical advice at the same moment, in the same book and the same analysis" (Foucault and Riggins, 1997, p. 132). Foucault engaged in political activism, but he maintained a level of separation between his private and professional life. "I have absolutely no desire to play the role of a prescriber of solutions", he said, "I think that the role of the intellectual today is not to ordain, to recommend solutions, to prophesy, because in that function he can only contribute to the functioning of a particular power situation that, in my opinion, must be criticized" (Foucault and Trombadori, 2000, p. 288). When one engages in politics, one is exercising power, and thus loses the privileged position that enables critique.

For my own part, critique is for uncovering the hidden, for puncturing the illusion, for painting the warts. Whatever one does with the truth once set free is another matter. Throughout this work I have tried to maintain a dispassionate distance. I have sought to suspend normative judgement as much as possible, and to synthesise something which at

least approximates impartiality—impossible as that may be. Where judgements are apparent, against the tropes of eugenics and biological elitism for example, it has been my intention to derive those judgements from, and situate them within, the criticisms levelled at the time: by the 'environmentalists' against the eugenicists; by the second-generation environmental Malthusians against the biological elitists—and then against themselves with regard to feminism. But this is not to say I have no judgments to make. I have my opinions, I have my politics, and over the course of this research I have become very well informed of the facts on which to base them.

In this regard I can state with certainty that I am not a Malthusian. It is not that I deny the basic axiomatic truth that the more people there are the less stuff there is to go around, nor do I deny the biophysical limits of the Earth, or the thermodynamic laws of the Universe; it is simply that I do not place population at the centre of the problems with which it was once associated. I concur with the Cairo consensus; the 'causes' run in the opposite direction. The 'problems' that require solutions are poverty and patriarchy. In this sense, population growth functions as a sort of 'indicator'. Just as we might use economic activity, educational attainment, or health and longevity to indicate the condition of society, population growth serves as a metric by which we can identify the presence and extent of a problem, so that we might take action to solve it. There is no 'solution' to population growth; only to the causes of population growth.

It would seem that global population is set to plateau at a little over 11 billion people by the year 2100 (UNDESA, 2017). Short of some nightmarish dystopia involving the slaughter of billions and the oppression of billions more, this projection is likely to become our reality. Tackling the social problems indicated by population growth is a given, but in the end, the reality with which we must contend is 11 billion people on one planet. The human race must learn to live within this reality and, in my opinion, there is no point wasting any more time talking about population control.

Before undertaking this research, I was very much on the 'radical' side of environmentalist politics. I saw structural, systemic problems as the root of unsustainable practices; thus, I saw upheaval and restructuring as the only real solution. That is still my natural position, but my view has been tempered by the outcomes of this research. I now take a more nuanced approach to the uses of knowledge, the possibilities of politics, and the operation of power. There has never been a wholesale upheaval and restructuring, because there is no homogeneous structure to upheave; there is only the vast multiplicity of force relations. Social and political change occurs within the field of real and existing

force relations, and one lesson I take from this research is to avoid monolithic, hegemonic descriptions of society. Society is a multitude of intersecting practices, and that should be our starting point.

This realisation has changed my view of ecological modernisation. As a radical environmentalist I saw it as a non-solution, business as usual, capitulation to the powers that be. But I have come to realise that ecological modernisation represents something momentous: it represents the establishment of environmentalism as a dominant discourse. Setting aside for a moment the fact that change enacted through political institutions is imperceptibly slow, the environmental problem has clearly been accepted and integrated into the project of modernity. A great many agencies, peopled by a great many individuals, are actively looking for ways to solve our environmental problems within existing political and economic institutions. Even the neo-liberals, once so opposed to environmentalism, are looking to design ways—within their own philosophy—to solve environmental problems, without waiting for the market to decide whether there is a problem to begin with.

It is gallingly frustrating, how slowly these machines move, but that is true of all political solutions. Slowness is built in to the system, a safety valve designed precisely to prevent upheaval. But despite its imperfection, despite even the very real possibility that it might not work, ecological modernisation is the expression of something fundamental: a deeply ingrained political discourse that does not permit the dismissal of ecology. The establishment of ecological knowledge will continue to drive the problematisation of anything that touches the environment. As a result of ecology's co-option of modernity, new solutions will be forthcoming, not just from the radical outside, but from within the *status quo*. Environmentalism will continue to push for as long as the discourse remains dominant. Ecological modernisation is not the end of environmentalist thought; it is the beginning of a new phase of modernity. Ecology is now a defining feature of civilisation.

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