

Broadening the Context of the Ecological Crisis:
Featuring the Orphic and the Promethean.

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Broadening the Context of the Ecological Crisis:
Featuring the Orphic and the Promethean.

By

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Declaration

I, David Anthony Pittaway, hereby declare that *Broadening the Context of the Ecological Crisis: Featuring the Orphic and the Promethean* is my own work, and has not previously been submitted for assessment to another University or for another qualification. Further, all the sources that I have used and/or quoted within this work have been clearly indicated and acknowledged by complete references.

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Here I acknowledge the Great Mystery, and thank the people who have worked to reveal how it is possible to be initiated into it. I also thank those who have *denied* the Great Mystery and instead advocated spurious ‘truths’ and ideologies: some of our best lessons in life are about how *not* to live it.

More specifically, I acknowledge the pivotal role Bert Olivier has played during the undertaking that culminated in this study, and throughout my academic journey – and not only my academic journey, but the academic journeys of so many people with enquiring minds. His friendship has been unconditional, his philosophical guidance invaluable, and his generosity commendable.

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I acknowledge my family, who have done exceptionally well to tolerate the ‘alternative views’ of a son and brother.

Finally, Andrea Hurst is here acknowledged for the invaluable contributions she has made to my philosophical journey, and for her friendship. Circumstances withdrew her from co-supervision of this study, but her influence in the planning phase set me on a ‘productive path’ that made all the difference.

Conventions

In this study I employ the following conventions:

- I refer to this PhD text as a study.
- I capitalise the 'C' and employ a numerical digit when referring to the names of chapters, i.e. Chapter 1, Chapter 2, and so on.
- I capitalise the first letter of certain words denoting what I consider to be 'institutions' with specific traceable histories. I do this in light of the attention Speth (2008:31) draws to the difference between idealised models versus what actually is the case in reality. Speth draws this distinction (though he does not capitalise the word like I do) in the case of Capitalism: "I use 'modern capitalism' here in a broad sense as an actual, existing system of political economy, not as an idealized model". Capitalism is one case in point; for the same reason as the one I have just highlighted, I also capitalise the words Christianity, Science, Technology, and Democracy throughout the study when I refer to them as actual, existing systems (as per Speth's distinction)¹; my reasons for viewing these as institutions will become clear as the study progresses. When a quotation is used, I stick to the original case (usually lower-case) used within the quotation itself, but revert back to the upper-case when 'outside' of the quotation. I must add that, *in practice*, this method of distinguishing between the two (i.e. actual existing systems versus idealised models) is not always a straightforward matter, and I request that 'grey areas' are tolerated regarding the use of uppercase and lowercase first letters for the use of the relevant words.
- I adhere to the South African English standard of using the letter "s" in words such as "idealised" instead of the American English standard where a "z" is used. When a quotation is used, I adhere to the original spelling used within the quotation itself, but revert back to the South African English standard when 'outside' of the quotation. This is demonstrated in the previous point of this section, where I first used "idealised", but then quoted Speth, who used "idealized".
- When I have used a quotation in which a term or phrase is used, and then wish to use the term shortly after the appearance of the quotation in a manner where I allude to the phrase or term as it appeared in the quote, I use either single inverted commas (") or double inverted commas (") to draw attention to the fact that the phrase or term came from the relevant quotation. Sometimes I drop this convention when a phrase or term is used several times after it has appeared in quotation format. I occasionally italicise a phrase or term to highlight it as one that has already been encountered.
- In this study I avoid the use of writing conventions that seem to me too formalised, to the point of obscuring the fact that, in the final analysis, statements made by authors represent their own, singular perspectives. Here it is no different: the analyses or interpretations offered regarding the many conceptual issues to be presented and clarified, as well as the overall

¹ I often capitalise the word 'Business' to denote something coterminous with 'Capitalism'.

argumentative progression of the study, is a particular, singular individual's work, albeit through the medium of language. Language is, after all, not any individual subject's exclusive domain, but something that pre-exists individuals and in which all share, in accordance with Wittgenstein's famous remark, that there is no such thing as a 'private language' (Wittgenstein 1967). My use of the first person singular ('I') should therefore be seen as signifying a singular perspective on a conceptually or linguistically constituted 'world' that is variously accessible from the perspectives of different subjects.

Abstract

There is an ecological crisis, categorised by various ecological indicators, and demonstrably propelled by specific large-scale human practices. These ecologically-destructive human practices could spread and grow historically because of the 'attitudinal' components accompanying various 'shapers of discourse', namely the versions of Christianity, Science, Technology, and Capitalism (and to a lesser degree, Democracy), that have historically dominated the discursive platforms from which human beings access their assumptions, and thereby form their attitudes, regarding what are acceptable human actions within given contexts and environments. Considering that White (1971:11) says the following, "What people do about their ecology depends on what they think about themselves in relation to the things around them", and also considering that the historically-dominant and dominating versions of Christianity, Science, Technology, and Capitalism all spread the dominion-imperative (where, among other 'objects', nature is that which is dominated), the current ecological crisis is to be expected. Furthermore, various forces or factors exist in 'Advanced'-Competitive-Consumer-Capitalist-Industrial-'Democratic'-Dominion (ACID) that perpetuate the 'Promethean' status-quo, forces or factors that effectively prevent alternatives to the status-quo from being able to spread and influence human attitudes (and therefore actions, considering White's comment above) in a manner formidable enough to achieve a diversity of ecologically-sensitive human systems needed to diminish harmful ecological phenomena. That said, alternative, 'Orphic' ideas and attitudes, arenas and phenomena, do exist: they offer attitudinal components working to effect radically different interactions between human beings and their environments, versus the problematic 'action-against-nature' characteristic of the Promethean. Permaculture is an example of actualised Orphic attitudes and approaches: it is a design system constituted by twelve principles (the first of which is 'observe and interact', immediately setting the scene for ecological-sensitivity) that together provide one with a flexible, context-bound approach to change human systems of all sizes, and importantly, to change the impacts the systems have on ecology in general. With the foregoing in mind, philosophy as characterised by Alain Badiou and Slavoj Žižek, and by Pierre Hadot, respectively, provides for interesting conceptual frameworks for the contextualisation of various features of the ecological crisis, its physical causes, its attitudinal causes, and alternatives to its attitudinal and physical causes. Badiou and Žižek, for example, are in agreement that philosophy is *not* a dialogue, that philosophy is the creation of new problems, that in philosophy the terms of the debate are changed; they list and discuss a number of intriguing features of philosophy relevant to the broad focal areas of this study. One such feature is the notion that each "time that philosophy confines itself to humanity as it has been historically constituted and defined, it diminishes itself, and in the end suppresses itself. It suppresses itself because its only use becomes that of conserving, spreading and consolidating the established model of humanity" (2009:74-75). As argued in this study, the "established model of humanity" is Promethean, so Badiou and Žižek do provide indirect support for the imperative to broaden focal areas in general to include, for example, aspects of the Orphic. Pierre Hadot's work on the notion of 'philosophy as a way of life' directly identifies the imperative in ancient philosophy to actualise ostensibly Orphic ways of thinking and being, with the two-fold effect of arriving at personal 'inner-peace' (which is surely valuable considering the 'worry' that justifiably accompanies knowledge of the ecological crisis), as well as the effect of nurturing 'wise' individuals (Hadot 1995:265-266) who strive for "cosmic consciousness" and who involve themselves in what Hadot calls "communitary engagement" (1995:274), which surely can be helpful in the broad context of the ecological crisis.

Summary

For each chapter of this study, I have asked specific questions in order to guide the chapter, and in each of the sub-sections of each chapter, I explore themes, critiques, analyses, ideas, theories, information and issues that are most relevant in light of the guiding questions.

In Chapter 1, I collate information and themes from a wide array of sources in order to ‘paint the backdrop’ of the contemporary² ecological crisis.

In Chapter 2, I again collate information and themes from a wide array of sources, this time to show that some specific human industries and practices are direct causes of the ecological crisis.

In Chapter 3, I focus on the non-physical, ‘attitudinal’³ factors that historically played central roles in ‘steering’ human actions towards ecologically-problematic ends. Lynn White Junior, Pierre Hadot, Thomas Berry, Arne Vetlesen, Max Horkheimer, Martin Heidegger, and Joel Kovel all feature as the *main* supporting critical voices in this chapter.

In Chapter 4, I identify various ‘mechanisms’ at play in the perpetuation of the dispensation driving the ecological crisis. In other words, these mechanisms are ones at play in the process whereby socio-political and economic change is prevented. The *main* featured critical voices in this chapter are J.S. Mill, Naomi Klein, Noam Chomsky, Robert McChesney, James Speth, Manfred Steger, Herbert Marcuse, Gilles Deleuze, and Thomas Princen.

In Chapter 5, I take something of a daring dive (daring mainly in the arena of orthodox academia) into the realm of ‘alternative ideas’. These alternative focal areas are incorporated into my academic purview in this study because they each offer examples of attitudes, ideas, models, or approaches that are notably alternative to the attitudes, ideas, models, or approaches of the ecologically-problematic focal areas looked at in previous chapters. Central areas of focus in this chapter are ‘older cultures’, Paul Hawken’s ‘unnamed social movement’, Rupert Sheldrake’s ‘morphic resonance’, Graham Hancock’s ‘lost civilisation’, Charles Eisenstein’s ‘sacred economics’, the Occupy Movement, the Zeitgeist Movement, and to a lesser degree deep ecology. Various other supporting voices will be included in this chapter as well.

In Chapter 6, I identify and elaborate on the details of the twelve permaculture principles with a view to exploring the relevance of these principles in light of aspects of the broad context established in Chapters 1 to 5 of the study. I do this reflectively in two senses – first in the sense that I consistently refer to information, themes or focal areas raised in previous chapters of the study; and second in the sense that for each permaculture principle I offer information based on my own experiences from the ‘rustic permaculture journey’ my partner and I embarked on in 2012, a journey that turned into a lifestyle she and I still practice at the time of submitting the final version of this study⁴. The main ‘voices’ in this chapter are Bill Mollison’s (the official founder of permaculture), the

2 I say ‘contemporary’ because there have been ecological crises in the past, for example the extinction event that ended the reign of the dinosaurs approximately 65 million years ago. The causes of the two crises, i.e. the contemporary one and the one of 65 million years ago, could not, however, be further removed from each other – I address the causes for the contemporary crisis later on in this study.

3 I address my use of the word ‘attitudinal’ in the sections called ‘Comments on some central terms’ and ‘Aims and methodology’.

4 I.e. late in the year 2017. The duration of living this rustic lifestyle, at the aforementioned point in time, is over five years.

Permaculture Association⁵ (where condensed information about permaculture is available), and my own, but other commentators are incorporated into the chapter as well.

In Chapter 7, I focus on what Alain Badiou and Slavoj Žižek have to say about the role of philosophy ‘in the present’, and thereafter on the insights provided by Pierre Hadot on the much older notion of philosophy as a way of life. In both cases I outline what I consider to be the main features of the role of philosophy as argued by the different thinkers, and then identify the relevance of their ideas in the light of various issues, themes, ideas, information, and focal areas that arise in previous chapters.

In the final section of the study, I offer suggestions that arise from reflection of some of the issues, themes, ideas, information, focal areas, theories, and arguments in the main chapters. For the purposes of this summary section, I offer the following general suggestion, one that encapsulates a variety of themes and issues that arise in the study:

Nothing *needs* to be done in the light of the ecological crisis, its physical causes, its attitudinal causes, its perpetuation mechanisms, and its alternatives. Nor does anything *need* to be done in the light of permaculture principles and the role of philosophy as they are explored in this study. Human beings can continue their current Promethean⁶ trajectory, with a very likely collapse⁷ of contemporary civilisation and a variety of other support systems that hold together the fragile collective ecology⁸ of this planet. But in the context of this study it is clear that this is only one direction offered to human beings; a different direction is one characterised by carefully-considered, ‘Orphic’⁹, alternative, ecologically-sensitive ways of thinking and being. *If*, however, human beings wish to avert the collapse of contemporary civilisation, and instead transition socio-political and economic systems towards ones ‘in tune’ with the requirements of nature (on which human beings inherently depend), *then* options are afforded to us. Everything that people do, or organisations do, or institutions do, or corporations do, and so on – everything that is done can be placed on a very broad, flexible, context-bound spectrum, which for the purposes of this study can be called the Orpheus-Prometheus spectrum. When this name is used for the spectrum, all that I have taken into consideration in this study is implied in the background of the consideration process, but at a more basic level, one could call it a spectrum of ecological-sensitivity, demarcating at one end ecologically-harmonious attitudes and actions, and at the other end ecologically-destructive attitudes and actions. In this manner I recommend widespread discussions at all levels of the socio-political and economic spectrum in which possibilities are considered regarding how to go about nurturing the Orphic arena wherever possible – I provide numerous examples of such possibilities in Chapters 5 and 6. Philosophy ‘in the present’, as depicted by Alain Badiou and Slavoj Žižek on the one hand, and ‘philosophy as a way of life’ as detailed by Pierre Hadot on the other, resonate with the general Orphic attitude, with a negative upshot, insofar as ‘the established model of humanity’ or ‘habitual perception’ (both of which are Promethean and heavily inculcated in causing the ecological crisis, as

5 www.permaculture.org.uk accessed 12 April 2017.

6 See the section called ‘Comments on some central terms’ for a clearer initial idea of what is meant by ‘Promethean’.

7 A deliberate reference to Jared Diamond’s Collapse, in which he concludes that contemporary civilisation is likely to collapse if current Promethean trends continue (though he does not employ the term ‘Promethean’). Consider this from him (2005:498): “Our world society is presently on a non-sustainable course, and any [one] of our... problems of non-sustainability... would suffice to limit our lifestyle within the next several decades. They are like time bombs with fuses of less than 50 years”.

8 ...of which human beings are a part, albeit a very influential part.

9 See the section called ‘Comments on some central terms’ for a clearer initial idea of what is meant by ‘Orphic’.

I show in the first four chapters, and to lesser extents in Chapters 5 and 6 as well) are the subject of extensive scrutiny across the board here. The practice of philosophy in the specific formats on which I focus therefore immediately halts 'Promethean' 'Business as usual', and provides guidance in approaching various complex issues associated with the ecological crisis. This halting of Promethean Business as usual is unavoidable as an urgent, necessary step *if* a movement towards a sustainable set of socio-political and economic systems¹⁰ is to be actualised, as agreed by Foster, Clark and York (2010:14): "If business as usual continues, the world is headed within the next few decades for major tipping points along with irreversible environmental degradation, threatening much of humanity".

¹⁰ An immediate objection to this notion of halting Promethean 'Business as usual' might be that such action would be bad for the economy. However, such an objection would highlight the faulty assumption that nothing that is currently being done under the banner of 'Business as usual' is bad for the economy. I address this point in Chapter 4, in the section called 'Princen's traffic control measures'.

Comments on some central terms

The ecological crisis: In this study, the ecological crisis is taken as axiomatic, though I do spend a considerable amount of space ‘painting the backdrop’ of some aspects of the ecological crisis in Chapter 1. The information and themes appearing in Chapter 1 certainly do create the sense that something diabolically problematic is occurring in the realm of planetary ecology. However, beyond the themes and information I compile in Chapter 1, an important precedent exists, comments upon which provide some insight as to why one simply could take the ecological crisis as axiomatic, especially in an academic context. This precedent is Lynn White Junior’s essay ‘The historical roots of our ecological crisis’ (1967)¹¹, in which, as the name suggests, the ecological crisis is taken as a given fact. In the essay, White refers broadly to some large-scale issues such as “the population explosion¹², the carcinoma of planless urbanism, [and] the now geological deposits of sewage and garbage”¹³, but one could say that in White’s era, people had generally only just started awakening to the worrying ecological situation then becoming apparent. For example, Rachel Carson’s *Silent Spring* was published in 1962, and her book is generally acknowledged to play an important ‘igniting role’ in the environmental movement¹⁴. Lesser known is Murray Bookchin’s *Our Synthetic Environment*¹⁵, also published in 1962 (under the pseudonym Lewis Herber), which as the title suggests, details large-scale, human-induced environmental changes. Bookchin argues throughout the book that the synthetic alterations in environment are the causes of widespread disease and suffering experienced by humankind – the rates of chronic disease on which he focuses do indeed justify the use of the word ‘crisis’ already back in 1962, though this is something of an anthropocentric focus. Some texts about ecological precariousness certainly can be found prior to the ones I have mentioned that were published in the nineteen-sixties, but it is particularly since the nineteen-sixties that innumerable environmentally and ecologically focused texts appear that detail aspects of the precarious ecological situation of planet Earth¹⁶. I do not wish to get into these topics in any depth in this section, but instead to point out that the notion of an ecological crisis is indeed well-established and is not an empty, fear-mongering claim from a fringe group in society, which is perhaps what proponents of ecologically-problematic ‘Business as usual’ might have one believe. As I have already mentioned, in Chapter 1 I work to establish information and themes pertaining to what I (based on the work of many other people and groups) refer to as an ecological crisis; I do not work to *prove* that there is an ecological crisis, but instead to offer some informational and thematic glimpses of why one would claim that there is an ecological crisis. I must add in closing here the personal comment that the available information I have read on the state of planetary ecology leads me to believe *beyond any doubt* that there is indeed an ecological crisis – in this manner I am in full

11 My research shows that the essay was first published in *Science* in 1967, but various republications occurred. In this section I quote from the footnoted online source, while in Chapter 3 I quote from a 1971 publication, which I list in the bibliography.

12 In 1967, the world’s population of human beings (based on UN data at www.geohive.com/earth/his_history3.aspx accessed 2 February 2017) was approximately 3.46 billion. At the time of writing this section in the year 2017, the number is approx. 7.48 billion, over double what it was in 1967. If a crisis in population was perceived by White in 1967, then our time is certainly marked by a heightened sense of urgency in this regard.

13 <http://www.cmu.ca/faculty/gmatties/lynnwhiterootsofcrisis.pdf> accessed 2 February 2017

14 See <http://www.nytimes.com/2012/09/23/magazine/how-silent-spring-ignited-the-environmental-movement.html> accessed 2 February 2017

15 Available online here: www.pucsp.br/ecopolitica/documentos/docs_especiais/docs/our_synthetic_environment_Bookchin.pdf accessed 2 February 2017.

16 At Wikipedia.com, for example, a long list of such texts conveniently appears under the search criteria “list of environmental books”.
https://en.wikipedia.org/wiki/List_of_environmental_books accessed 2 February 2017

agreement with Bert Olivier, who espouses exactly the same position in academic detail¹⁷. The information I have seen comes from various arenas in which empirical evidence is used, and in which reputable commentators offer commentary on, and interpretations of, the evidence. However, as Olivier points out, “In the final analysis... one must make up one’s mind, which is no easy task, by using as many sources of information as possible and exercising independent thinking and judgement”. In this study I collate information, themes, and ideas, and I construct and support arguments, which together assist one in the decision-making process to which Olivier refers.

The Promethean: In Chapter 3 I uncover the notion of ‘the Promethean attitude’ as employed by Hadot in *The Veil of Isis* (2008): “the Promethean attitude is inspired by audacity, boundless curiosity, the will to power, and the search for utility” and it “penetrates the secrets of nature... through violence” (2008:91-98). This notion of the Promethean attitude becomes central to this study after it first appears in one of the main chapters, specifically Chapter 3. I often use the term to denote a noun, for example when I write ‘the Promethean’. ‘The Promethean’ denotes a broad arena encompassing a specific attitude toward nature and accompanying ecologically-problematic actions; some or all of the various Promethean characteristics that I work to uncover throughout this study are at play when I use the term ‘the Promethean’. For now, one can approach the concept of the Promethean as more-or-less synonymous with the term, ‘ecologically-problematic’. Note that the Promethean may be conceptualised in its extreme form as occupying one end of a spectrum (I discuss this conceptual spectrum in the Recommendations section), and my focus in this study is often on ‘shapers of discourse’ (a central term on which I comment in this section) exhibiting extremely Promethean qualities; it is not my contention that any ‘pure’ manifestations of Promethean attitudes exists, because (as I discuss in the Aims and Methodology section), it is almost certainly impossible for any such manifestations to exist. However, some ‘shapers of discourse’ exhibit extremely Promethean qualities, qualities that are under scrutiny in this study.

The Orphic: As is the case with the Promethean, I uncover the notion of ‘the Orphic attitude’ in Chapter 3, specifically in light of some of Hadot’s work in *The Veil of Isis* (2008): “Orpheus... penetrates the secrets of nature not through violence but through melody, rhythm, and harmony”; and “the Orphic attitude... is inspired by respect in the face of mystery and disinterestedness” (2008:91-98). This notion of the Orphic attitude also becomes central to this study after it first appears in Chapter 3. As in the case of ‘the Promethean’, I often use the term ‘the Orphic’ to denote a noun. ‘The Orphic’ denotes a broad arena encompassing a specific attitude toward nature and accompanying ecologically-respectful actions; some or all of the various Orphic characteristics that I work to uncover in this study are at play when I use the term ‘the Orphic’. For now, one can approach the concept of the Orphic as more or less synonymous with the term, ‘ecologically-sensitive’. Note that the Orphic may be conceptualised in its extreme form as occupying one end of a spectrum (I discuss this conceptual spectrum in the Recommendations section), and my focus in this study is often on ‘alternatives’ exhibiting extremely Orphic qualities; it is not my contention that any ‘pure’ manifestations of Orphic attitudes exists, because (as I discuss in the Aims and Methodology section), it is almost certainly impossible for any such manifestations to exist. However, as in the case of the Promethean, extremely Orphic qualities are sometimes exhibited, qualities which are under investigation in this study.

¹⁷ See Olivier’s Thoughtleader article, ‘Is there an ecological crisis?’ <http://thoughtleader.co.za/bertolivier/2009/10/13/is-there-an-ecological-crisis/> accessed 2 February 2017, as well as his paper, ‘Nature, capitalism, and the future of humankind’, *South African Journal of Philosophy* 24 (2), pp.121-135, 2005.

ACID: This acronym first appears in Chapter 3, sub-section 3.6. It is an acronym Hoyer (2012:48) attributes to Kvaloy, standing for *advanced competitive industrial democracy*. The acronym ACID ‘grew’ from Kvaloy’s initial use of ‘IGS’ – industrial growth society. The attributes of ACID, which I list in sub-section 3.6, overlap uncannily with some of the ‘characteristics’ of the Promethean as I uncover them in earlier parts of Chapter 3, so I have taken the liberty in this study to add (in hindsight) some compatible Promethean ‘qualities’ and systemic ‘mechanisms’ to the acronym. Specifically, I use ACID to denote the following: *advanced, competitive, Capitalist, consumer, industrial, Democratic, dominion*. This is a proverbial ‘mouthful’, but it appropriately captures some central features of the Promethean attitude and dispensation I uncover in this study.

Christianity, Technology, Science, Capitalism¹⁸, and Democracy: Here I wish to draw attention to several things. First, and most straightforward, is the capitalisation of these ‘terms’– my reason for doing so is explained in the Conventions section, specifically in the third point I make about the conventions I use. To summarise from that section: I capitalise these terms to draw attention to them as *actually existing ‘institutions’ with specific histories, versus their idealised forms*. See the Conventions section for more details, as well as the theoretical justification (from Speth) that I provide for the distinction I have drawn.

Second, I wish to draw attention to the important point that my grouping of these ‘shapers of discourse’ (a central term on which I comment in this section) under the banner of the Promethean does not imply that I consider them to ‘be in agreement’ on all matters, so to speak. I am cognisant of the fact that the rise of modern Science and concomitantly the rise of modern Technology (which are arguably largely constitutive of modernity) bear a historical relationship with the Church that is not unambiguous. While, as I argue, both Christianity (i.e. the Church) and Science in their historical forms exhibit strong Promethean qualities that must be seen as instrumental in causing the ecological crisis, I am aware of the tensions that have historically characterised the relations between them. One such example is when the Church forced Galileo to recant his position on the motions of the planets. Such ‘disagreements’ or ‘incompatibilities’, however, do not contradict my claim about the powerful presence of Promethean qualities in both these institutions (or, for that matter, in the other ‘shapers of discourse’ I examine). In a nutshell, the relationship between Science and Christianity (the Church) was not without its complications, but specific ‘disagreements’ between members of the different ‘shapers of discourse’ I focus on in this study have little to do with whether or not the ‘shapers of discourse’ exhibit Promethean characteristics.

Third, I focus on ‘attitudinal’ aspects (I comment on this central term, i.e. ‘attitude’, in this section) of the listed ‘shapers of discourse’ that are problematic in the context of the ecological crisis. More colloquially, I provide information about them that portrays them as ‘villains’ in the context of the ecological crisis. I do make some comments in Chapter 3 to suggest that Christianity has ‘an Orphic streak’ (as is clear in the instance of St Francis of Assisi’s ethos) and that technology can be applied for Orphic purposes; and in Chapter 5 I offer an instance of a considerably Orphic manifestation of science and of ‘economic activity’. My intention, however, is to create a framework from which to understand the ecological crisis, and an essential component of this framework is the attitudinal one, i.e. the one pertaining to that which gives impetus to ecologically-problematic assumptions and actions. I show unambiguously in Chapter 3 that different aspects of the Promethean attitude can be

¹⁸ Note that I often use the term ‘Business’ or ‘big-Business’ to denote something very similar to Capitalism, hence my capitalisation of the word ‘Business’ as well.

attributed to the listed 'shapers of discourse'. It is surely possible to identify features of the listed 'shapers of discourse' that 'redeem' them somewhat, but this is not one of my aims in this study, and besides, doing so would not absolve the listed 'shapers of discourse' from 'villainy' in the context of the ecological crisis – my intention is to trace dominant Promethean attitudes to their origins. In conducting research into the question of the 'non-physical' drivers of the ecological crisis, the listed 'shapers of discourse' were presented and critiqued by various thinkers (I identify them in Chapter 3); I did not set out to 'prove' that the listed 'shapers of discourse' are 'villains' in the context of the ecological crisis – various assumptions, dogmas, priorities, agendas, and so on, attributed to them 'speak for themselves' in this regard.

Finally, if there is any confusion regarding how to understand Christianity, Technology, Science, Capitalism, and (peripherally) Democracy within the ambit of this study, then one can simply consider them to be historically-dominant *institutions* that have 'shaped discourse'; I comment on 'shapers of discourse' in this section. It will be seen in this study that the 'institutions' have 'shaped discourse' because they manifest Promethean qualities (and it must be added that such discourse, in turn, shapes and reinforces the dominant attributes of institutions), and Promethean qualities, as I argue in this study, have the effect of domination when practiced. The simple fact that these 'institutions' have been historically dominant lends support to the notion that they have exercised characteristics and qualities such as domination, which, as I show in this study, are Promethean qualities.

Attitude: I use the word 'attitude' frequently in this study in light of Pierre Hadot's use of the word in the quotes that have already featured in this section, specifically where I commented on the Promethean *attitude* and the Orphic *attitude*. The word 'attitude' is chosen in favour over the words 'ideology', or 'discourse', because ideologies and discourses presuppose attitudes, which are arguably more fundamental from one perspective (more or less in the sense that in Lacan's psychoanalytic theory of the subject, 'desire' is *fundamental* to a person's actions; see Evans 1996: 36-38), even if attitudes are shaped, reciprocally, by discourses, ideologies and institutions. Furthermore, in 1992, "1,700 of the world's leading scientists, including the majority of Nobel laureates in the sciences,"¹⁹ chose to use the word 'attitude' in their collective 'Warning to Humanity':

A great change in our stewardship of the earth and the life on it is required if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated. ... A new ethic is required – a new **attitude** towards discharging our responsibility for caring for ourselves and for the earth. We must recognize the earth's limited capacity to provide for us. We must recognize its fragility... The scientists issuing this warning hope that our message will reach and affect people everywhere. We need the help of many.²⁰ [Emphasis added]

Shapers of discourse: I specify what I mean by this term at the beginning of Chapter 3, but I will here comment on its use to clarify what I mean by it right from the outset of this study. Shapers of discourse play a part in shaping the way people "think about themselves in relation to the things around them" (White 1971:11) – in this study I identify four dominant ones, specifically Christianity, Science, Technology and Capitalism (all of which I focus on in Chapter 3), with a peripheral fifth being Democracy (which I focus on in Chapter 4). The word 'discourse' is used here to denote "a

¹⁹ http://www.ucusa.org/about/1992-world-scientists.html#.Vcw_4B9uTVM accessed 2 March 2017

²⁰ The quoted passage is constituted by snippets from the entire text, available at <http://www.webcitation.org/61DcmWeQM> accessed 2 March 2017

formalized way of thinking that can be manifested through language, a social boundary defining what can be said about a specific topic, or, as Judith Butler puts it, “the limits of acceptable speech’ – or possible truth. Discourses are seen to affect our views on all things; it is not possible to avoid discourse”.²¹

²¹ <https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Discourse.html> accessed 23 December 2014

Hypotheses

This study consists of seven main chapters, each of which works to support a different hypothesis. *I do not wish to support every hypothesis equally* – in Chapters 1 and 2, for example, I wish to create a very broad backdrop of themes and information that will ‘set the scene’ for later Chapters²². In Chapters 3, 4 and 7, a ‘traditionally academic’ approach²³ will be taken in supporting the hypotheses of those chapters. In Chapter 5 I will offer information to establish outlines of particular (‘alternative’) focal areas, while in Chapter 6 I take a more reflective turn and explore permaculture principles in the light of the theoretical basis established in Chapters 1 to 5, as well as in the light of my own experiences with permaculture. Here follows the hypotheses of each chapter:

Chapter 1: ‘Something’ is happening in the realm of planetary ecology that is cause for serious concern. This ‘something’ is generally referred to as the ecological crisis, which is constituted by various ‘ecological indicators’ that together indicate a massive overall degradation of the life-support systems of planet Earth. This degeneration is so intense that the contemporary epoch is often referred to as ‘the sixth mass extinction of life on Earth’²⁴.

Chapter 2: The current degeneration of the life-support systems on Earth has specific *physical* and *material* causes. Specifically, these causes can be traced to phenomena that are ‘part and parcel’ of various large-scale human industries, practices, and systems. Accordingly, this geological period in Earth’s history has increasingly been referred to as *the anthropocene*, which Rosi Braidotti (2013:79) describes as “an age when the earth’s ecological balance is directly regulated by humanity”²⁵.

Chapter 3: Several dominant ‘shapers of discourse’ exist that explicitly promote human attitudes that are unambiguously hostile towards nature and accordingly direct or drive human action toward ecologically-destructive ends. These shapers of discourse are Christianity, Science, Technology, Capitalism, and Democracy in their actual historical formats, versus their *idealised forms*²⁶. Together they have paved the way for the ‘Promethean’ dispensation of ACID²⁷.

Chapter 4: Various Promethean ‘mechanisms’ have developed historically that resultantly prevent transition away from the ecologically-problematic actions associated with ACID. Awareness of

22 I will comment more on this ‘setting of the scene’ in the ‘Aims and methodology’ section.

23 Again, I will comment on this approach in the ‘Aims and methodology’ section.

24 Kovel (Kovel 2007:1+2) points out that at “the dawn of a new millennium, one could observe” that species “were vanishing at a rate that has not occurred in 65 million years”. Foster, Clark, and York (2010:39) state that “Homo sapiens under the present economic and social system are destroying natural habitat, which is driving the sixth mass extinction”. Also see www.sciencemag.org/news/2011/03/are-we-middle-sixth-mass-extinction (accessed 6 February 2017).

25 Additionally, Foster, Clark, and York (2010:12) have this to offer about the Anthropocene: “The term Anthropocene was coined a decade ago by the Nobel Prize-winning atmospheric chemist Paul Crutzen to mark the coming to an end, around the time of the late-eighteenth-century Industrial Revolution, of the Holocene epoch in planetary history. Holocene literally means ‘New Whole.’ It stands for the stable, interglacial geological epoch, dating back 10,000 to 12,000 years, in which civilization arose. Anthropocene, in contrast, means ‘New Human.’ It represents a new geological epoch in which humanity has become the main driver of rapid changes in the earth system.” The same authors also point out (2010:17) that the anthropocene is “a potential terminal event in geological evolution that could destroy the world as we know it”, and they add (Ibid) that the anthropocene “may be the shortest flicker in geological time, soon snuffed out”. See also the following sources for more perspective on the anthropocene: <https://eos.org/opinions/what-is-the-anthropocene>; <http://science.sciencemag.org/content/340/6130/261>; <http://science.sciencemag.org/content/351/6269/aad2622.long>; <http://apnews.excite.com/article/20141014/us-sci-age-of-humans-961f501908.html>. All accessed 6 February 2017

26 See my comments, which I take from Speth (2008:31), on the difference between actually existing models versus idealised forms thereof, in the ‘Conventions’ and ‘Comments on some central terms’ sections.

27 At no point do I argue that these shapers of discourse are exclusively causal in the formation of ACID and/or the ecological crisis; however, I identify these shapers of discourse as manifestations of, as well as perpetuators of, various attitudes and characteristics central to the ecologically-problematic state of planetary affairs.

Promethean characteristics (qualities such as dominion and domination) and Promethean mechanisms renders the claim, that ‘there is no alternative to the systems that constitute ACID’²⁸, naïve or biased. Instead, the reign of the Promethean must be situated in the context of the homogenising²⁹ modus-operandi of ACID and its accompanying perpetuation mechanisms.

Chapter 5: Despite the centuries-long reign of the Promethean, various peripheral (Orphic) ‘alternative ideas’ are available that exemplify what the outcomes of ecologically-respectful attitudes look like. These ‘alternative ideas’ generally, either directly or indirectly, emphasise the shortcomings of the Promethean and various aspects of ACID, and instead promote attitudes, ways of thinking, and ways of being that constitute some of the ‘ingredients’ for a dispensation in which human beings would have an entirely different relationship with the collective ecology of planet Earth.

Chapter 6: Permaculture is a design system consisting of principles, directives, priorities and ethics that direct human attitudes and actions toward actually-achievable sustainable outcomes, versus the kind of ecologically-problematic outcomes associated with the ‘greening’ of big-Business where the ‘costume’ of the character is changed but the character remains unaltered (so to speak). Permaculture offers a framework with which to reflect on some of the issues identified during Chapters 1 to 5, a framework which can also be used by individuals, groups and organisations to work to achieve a form of autonomy usually unachievable for the average person living according to the strict and homogenous rules of ACID. In other words, permaculture changes the rules of the ‘game’ ordinarily dominated by Promethean shapers of discourse, towards rules of a ‘game’ clearly ‘played’ in a manner compatible with the Orphic qualities and characteristics identified in this study.

Chapter 7: Alain Badiou and Slavoj Žižek characterise philosophy ‘in the present’ – or more specifically, *the role of philosophy* ‘in the present’³⁰ – in manners that depict it as ostensibly compatible with various central Orphic characteristics, as well as incompatible with various central Promethean characteristics. The same can be said for Hadot’s depiction of the older notion of ‘philosophy as a way of life’. Due to their explicitly Orphic and un-Promethean characteristics, philosophy in the present on the one hand, as well as philosophy as a way of life on the other, are very useful depictions of the role of philosophy in the context of the ecological crisis and associated phenomena and ideas (as I explore these phenomena and ideas) in the first 6 chapters of this study.

28 See my comments on the TINA claim in the conclusion of Chapter 5.

29 I use the word ‘homogenisation’ in light of Rosi Braidotti’s use of it. In her book *The Posthuman* (2013), she uses the word homogenisation when she mentions the “homogenization of cultures under the effects of globalized advanced capitalism” (2013:49).

30 I use the clause ‘in the present’ because the title of the book in which Badiou and Žižek describe and substantiate their views regarding the role of philosophy is *Philosophy in the Present*.

Aims and methodology

In Chapters 1 and 2, I aim to establish broad issues and themes pertaining to the ecological crisis and its direct physical causes. Due to space constraints, the sub-sections constituting Chapters 1 and 2 will be short and ‘punchy’ and cover a wide range of issues and themes, thereby establishing an extensive backdrop for later chapters. The range of issues and themes will indeed be very wide; some of the issues or themes will often be ones to which entire fields of study are dedicated. Considering that these two chapters will be the first two of a seven-chapter study wherein the main, ‘higher-order’ academic activities will occur after Chapters 1 and 2, it will be impossible in these initial chapters for me to provide anything other than ‘glances’ of phenomena to which my attention was drawn when researching the primary constituents and causes of the ecological crisis. But what these chapters will lack in depth, they will make up for in breadth. They are not meant to be dedicated rigorously to any one issue or theme or the thorough support for any one issue or theme, but rather identify a variety of issues and themes in order to draw attention to the fact that *related phenomena of considerable proportions are coalescing into a seriously worrying state of planetary ecology* on the one hand, and on the other hand, that *a specific systemic human dispensation is causing the ecologically precarious situation*. Stated differently (and more figuratively), my intention in Chapter 1 is to support the notion that planet Earth has what Paul Hawken (2007:3) calls “a life-threatening disease”³¹ and to reveal some of the symptoms of the ‘disease’, and in Chapter 2 my intention is to identify human industries and systemic mechanisms that have been instrumental in ‘making the patient ill’³².

Having laid a broad backdrop in Chapter 1 of the nature of the ecological crisis, and in Chapter 2 of the causes of the crisis, I will in Chapter 3 shift focus to some of what I call the ‘attitudinal factors’ that historically have driven the ecological crises. I use the word ‘attitude’³³ (referred to briefly earlier) deliberately in light of observations made by a central thinker whose ideas will feature prominently in this study, namely Pierre Hadot. In *The Veil of Isis* (2008:91–98) Hadot identifies a dichotomy, namely the Promethean-Orphic dichotomy, and to do so he uses the word ‘attitude’:

Orpheus... penetrates the secrets of nature not through violence but through melody, rhythm, and harmony. Whereas the Promethean attitude is inspired by audacity, boundless curiosity, the will to power, and the search for utility, the Orphic attitude, by contrast, is inspired by respect in the face of mystery and disinterestedness.

This dichotomy will feature heavily in this study, so at this early stage of the study I must draw attention to the ostensible problem of putting such a dichotomy to use. I have already pointed out, in the Comments on Some Central Terms section, that there is no manifestation of the ‘purely Promethean’ or ‘purely Orphic’, a claim I will soon support by way of reference to Derrida. In the meantime, some observations from Pierre Hadot (2006:98) will provide a start to revealing the problem with positioning the Orphic and the Promethean at the extreme ends of a spectrum:

On the one hand, nature can present itself to us in a hostile aspect, against which we must defend ourselves, and as a set of resources necessary for life, which must be exploited. The moral motive force of the Promethean attitude – which is also that of Aeschylus’ Prometheus – is the desire to help humanity. In his Discourse on Method, Descartes affirms that it was ‘for the

31 Some of Hawken’s work is considered in Chapter 5, sub-section 5.3.

32 Lovelock (2009:46-47) also uses the ‘sick patient’ analogy in *The vanishing face of Gaia: a final warning*.

33 I comment on my preference of the word ‘attitude’ over the word ‘ideology’ in the section of this study called ‘Comments on some central terms’

general good of all human beings' that he refused to keep hidden the discoveries he had made in physics. The blind development of technology and industrialization, however, spurred on by the appetite for profit, places our relation to nature, and nature itself, in danger. On the other hand, nature is both a spectacle that fascinates us, even if it terrifies us, and a process that surrounds us. The Orphic attitude, which respects it, seeks to preserve a living perception of nature; at the opposite extreme from the Promethean attitude, however, it often professes a primitivism that is not without danger either.

So, at a superficial level, nowhere in this study could I, nor would I, suggest that a 'purely Orphic' idea, movement, economy, or system is a reasonable 'goal' (or a 'good idea') in the context of the ecological crisis. However, at a deeper level, my distinction between the Orphic and the Promethean does not amount to the claim that the Orphic and the Promethean are not related. A different, deconstructively sensitive way of saying this, is that the Promethean and the Orphic are not strictly separable – one presupposes the other. When I describe certain shapers of discourse as Promethean, I mean that they have been *predominantly* Promethean in their historical forms, even if a more Orphic embodiment or incarnation of each can be articulated. To put it in terms used by Jacques Derrida (2005:66-67) in relation to the practice of hospitality, hospitality is either practiced conditionally or unconditionally (excessively). In my argument regarding these two concepts (i.e. the Promethean and the Orphic), this means that nature could be regarded as the host or hostess, and the Promethean and the Orphic could be regarded as attitudes towards (or uses of) the hostess' hospitality. This hospitality is, in the case of nature, either conditional or unconditional. The Promethean, which takes advantage of the hostess' hospitality, abuses it, while the Orphic respects it, in this way leaving it intact. The point is that one could offer a reading of the relationship between the Orphic and the Promethean that parallels Derrida's reading of hospitality. According to him, pure, unconditional hospitality is 'impossible' (because the host could, in principle, lose everything to the guest), which is also the case with conditional hospitality (that is, it is 'impossible', because it limits hospitality unbearably, in principle undermining it). In the case of the former, it would mean that the guest would abuse nature's or the hostess' hospitality, as the Promethean in fact does, while the Orphic leaves nature or the hostess intact by respecting her integrity. In the case of conditional hospitality, if too many conditions applied, neither the Orphic nor the Promethean would have any access to nature, but we know this not to be the case – nature *does* lay down some conditions (specifically regarding the ecological conditions pertaining to life, which must not be violated), but generally not 'impossible' conditions, and therefore she could be, and is, demonstrably abused or violated by the Promethean (specifically regarding ecological integrity). In Derrida's case, a productive approach to hospitality entails an interweaving of the conditional and unconditional, the one limiting the other and making hospitality possible. Hence, in terms of the Promethean and the Orphic, this means that, as I state elsewhere, they can be seen as extreme positions on a spectrum, and in practice they are usually to some degree interwoven, with one or the other being dominant. For example, in the case of Christianity, there are elements or instances which mitigate the excesses of the Promethean, such as St. Francis of Assisi (an instance I refer to in Chapter 3, as well as elsewhere), but the Promethean excesses remain dominant. For the purposes of this study, the notion of a dichotomy is useful as a conceptual tool, one that involves a spectrum on which ecologically-sensitive and ecologically-problematic attitudes and actions can be positioned – I explain this in the Recommendations section.

In this early light of the Prometheus-Orpheus dichotomy – which can, in light of the above comments, be considered a 'working dichotomy', in the same way as a hypothesis may be

considered a ‘working hypothesis’ – and in the spirit of simplicity, I can say that in Chapter 3 I will identify Promethean attitudes that ‘drive’ and ‘justify’ the human industries that cause the ecological crisis – I will therefore establish *causal links between physical and attitudinal factors* and in so doing bring to the forefront some causes of the ecological crisis that are often overlooked by parties concerned with the state of the planet’s ecology. Chapter 3 will be far more ‘traditionally academic’ than Chapters 1 and 2, mainly because the approach I take in Chapter 3 is to analyse what I call ‘shapers of discourse’³⁴ (which are instrumental in causing the ecological crisis) by collating some of the critical and explanatory commentary from various reputable thinkers who have analysed the shapers of discourse on which I focus in this study. In explaining the modus-operandi of the relevant shapers of discourse on which I focus, I achieve the first goal of critical theory in its broad and narrow senses of the term ‘critical theory’, as commented on by James Bohman³⁵:

Because such theories aim to explain and transform all the circumstances that enslave human beings, many ‘critical theories’ in the broader sense have been developed. They have emerged in connection with the many social movements that identify varied dimensions of the domination of human beings in modern societies. In both the broad and the narrow senses, however, a critical theory provides the descriptive and normative bases for social inquiry aimed at decreasing domination and increasing freedom in all their forms.

This information from Bohman about critical theory is of considerable relevance to my aims in this study considering that the shapers of discourse on which I focus in Chapter 3 – namely Christianity, Science, Technology, Capitalism, and to a lesser extent Democracy – are ones I intend to characterise partly by their *dominating and domination-crazed modus operandi*, and domination and the valorisation of dominion are central Promethean characteristics that will emerge in Chapter 3. With regard to Bohman’s remarks, my focus in this study will only partly be on factors relating to the domination of human beings, but also heavily on factors related to the domination of the non-human world – so I *broaden* the first goal of critical theory as Bohman has described it.

In Chapter 4, this aspect of critical theory will continue in a manner that does similar justice to the first aim of critical theory as per Bohman’s comments, especially considering his assertion that critical theory is partly focused on revealing and analysing forms of enslavement: the focus in Chapter 4 will become the workings of various Promethean ‘mechanisms’ that prevent social change, change away from a dispensation whose dominion-focused, Promethean, ecologically-problematic characteristics³⁶ I aim to reveal in Chapter 3. Chapters 3 and 4 will therefore be very similar methodologically, and both constitute a traditionally academic approach in tune with the first aim of a critical theory as commented on by Bohman, which is to say providing explanatory and descriptive means by which to view oppressive socio-political, economic, and (I will add) anti-ecological apparatuses. This approach will also be in keeping with what Inge Konik (2015:10) refers to as ‘academic transversalism’ in her PhD³⁷, where transversalism denotes the analysis of “political economy” and “socio-cultural” phenomena with a view toward “philosophical reflection”. In Chapters 3 and 4 I will conduct such an analytical process and begin to offer philosophical reflection

34 I give a brief indication of what I mean by discourse in the section called ‘Comments on some central terms’.

35 <https://plato.stanford.edu/cgi-bin/encyclopedia/archinfo.cgi?entry=critical-theory> accessed 6 February 2017

36 ...and by corollary, socially-problematic characteristics as well.

37 Konik’s study is called ‘Whither South Africa – neoliberalism or an embodied communitarian indigenous ethic’. As the title suggests, Konik problematises the contemporary status quo, which she identifies as dominated by the hegemony of neoliberalism. My work in this study resonates with hers in identifying socio-political, economic and ecological ‘fills’ and in exploring alternatives in an attempt to provide an approach toward remedy. In this manner, both Konik and I are working within the broad realm of critical theory as already described by Bohman in this section.

on various themes, phenomena, ideas, and so on. In these chapters I will gradually refer back to focal areas (information, themes, ideas, etc.) identified in previous chapters – this process of ‘referring back’ will continue in Chapters 5, 6 and 7 – there will therefore increasingly be a sense of progressive ‘linkages’ between chapters, a sense I will cultivate with the aim of incrementally broadening the general purview of this study.

In Chapter 5 I will begin to explore alternatives to Promethean attitudes and ‘models’, which is to say that I will explore Orphic areas of focus where ecologically sensitivity and ecological respect are either implicit or explicit aspects of the focal area. These alternatives are lesser-encountered in, and are peripheral to, mainstream Promethean dominant discourse, and are perhaps ones that go against the general flavour of orthodox academia, where focal areas tend to be accepted as legitimate mainly when peer-reviewed journals can be referenced to justify the inclusion of the focal areas in further academic ventures³⁸. In this regard I will again refer to Konik’s transversal approach, specifically where she comments on the importance of dialogue – dialogue, I must add, between seemingly disparate approaches: she points out that only a “grassroots transversal dialogue is capable of contesting the homogenizing neoliberal monologue in a way that builds social movement alliances bottom up and across the board” (2015:7). The neoliberal *monologue* to which Konik refers is part-and-parcel of what I more broadly refer to as the realm of the Promethean. It is in Chapter 5 that I will begin to look beyond the realm of the Promethean, and in so doing I aim to begin to offer to potential interlocutors (in the dialogue referred to by Konik) *heterogeneous* ideas, connected by their Orphic imperatives or implications, that are potentially useful in “decreasing domination and increasing freedom”, which is the second characteristic of critical theory already identified in this section in the Bohman quotation.

My focus on permaculture in Chapter 6 will be entirely in keeping with the latter characteristic of critical theory – to repeat, where the goal is partly to decrease “domination and increas[e] freedom” – because in Chapter 6 I will aim to highlight permaculture as a flexible design system with ecologically-respectful principles that resonate with some aspects of the focal areas of Chapter 5, principles that at the same time can be applied to foster personal autonomy in a variety of different contexts. I take the liberty of being very reflective in this chapter, specifically in hindsight of several years of living a ‘low-tech’, rustic permaculture lifestyle, one in which my partner and I put to the test some of the principles enumerated by Bill Mollison (the founder and initial primary populariser of permaculture), and by the Permaculture Association of the United Kingdom. I will refer extensively to the main principles and other concepts and observations extracted from Mollison’s seminal text, *Permaculture: a designer’s manual* (1988), as well as from the Permaculture Association’s website, in order to guide and substantiate my reflective commentary that derives from my personal experiences with permaculture. In this chapter I will also refer back broadly to focal areas that arose in previous chapters of the study.

In Chapter 7 I will consult three well-established philosophers on the question of the role of philosophy, and I will summarise some of the key points, observations and arguments they offer with the aim of exploring these points, observations and arguments in the broad context established in Chapters 1 to 6; and vice versa, in that the broad context established in Chapters 1 to 6 will be ‘orientated’ according to the points, observations and arguments made by these philosophers. The

³⁸ In this section I soon comment, by way of Konik and the academic to whom she refers (namely, Connell), on academic insularity in a manner that is very relevant here.

philosophers are Alain Badiou, Slavoj Žižek and Pierre Hadot. I take Badiou and Žižek's contributions to this question of the role of philosophy from a book called *Philosophy in the Present* (2009) – the book is a transcript of a public discussion³⁹ between the two thinkers in Vienna, where the theme is the question: “to what extent does philosophy intervene in the present”? (2009:1). My reading and interpretation of their views lead me to the conclusion that the role of philosophy in the present is distinctly aligned with an Orphic process, and is clearly opposed to aspects of the Promethean dispensation as explored in earlier chapters; it is partly my aim to evidence these points in the first half of Chapter 7. The second half is based on the notion of philosophy as a way of life as explored by Pierre Hadot. Right from the outset of Hadot's exposition of the concept of philosophy as a way of life, it is clear to me that it is thoroughly Orphic in character and explicitly opposed to the Promethean dispensation to which I have just referred, and I aim to substantiate these points in the second half of the chapter. My method should be clear: extract central points from the different texts and orientate them within the context developed in earlier chapters, emphasising resonance and/or opposition to what I call Orphic and Promethean attitudes. Clearly this method is hermeneutic (as it is from Chapter 3 onwards) because it requires interpretation and synthesis of numerous themes, ideas, issues, theories, facts, etc. emerging from earlier outlines and critical analyses of diverse subject matter.

It should be clear that I will be taking a flexible interdisciplinary approach in this study – from the establishing of themes via facts, figures and commentary in Chapters 1 and 2, to critical and philosophical observation and argument in Chapters 3 and 4, to outlines of ‘alternative’ ideas in Chapters 5 and 6 where earlier issues, themes, and phenomena are commented upon and interpreted in light of new information, to the reflective synthesis in Chapter 7. In explanation and justification of this flexible interdisciplinary approach, I refer first to the positive praise given to it by Rosi Braidotti in her book *The Posthuman* (2013:155): she mentions “a wealth of innovative interdisciplinary scholarship in and across the Humanities” being “an expression of the vitality of this field”. Norwegian ecophilosopher Karl Hoyer (2012:62) provides some insight as to why ‘innovative interdisciplinary scholarship’ is praiseworthy; here he is referring to Nordic ecophilosophy, but his comment is perfectly relevant to interdisciplinarity in its broader forms:

The fundamentals of interdisciplinarity are emphasized in all Nordic ecophilosophy. The bio- and human ecology focus on wholeness, on complexities, and on the complex inter-relations between the diversity of units, that makes the whole both something more and something else than the individual parts. Interdisciplinarity is considered a basic condition for the study and understanding of these complexities.

Complex ‘inter-relations between the diversity of units’ and the whole being ‘both something more and something else than the individual parts’ are phrases that do not fit in the quantitative, reductionist, mechanistic and mechanising, dominating frameworks I explore in Chapter 4 as partly characterising the Promethean. The interdisciplinary approach I am describing and justifying here, in light of Hoyer's observations, therefore seems to me to be an appropriate methodology due to its opposition to Promethean characteristics.

³⁹ ‘Discussion’ is here perhaps misleading. ‘Presentation’ would be better. I say so because each philosopher presents their ideas in more-or-less a monologue format – first Badiou, followed by Žižek. The transcript of Badiou's work is 48 pages, followed by 23 pages of Žižek's reply to the topic. A ‘discussion’ then ensues – the entire discussion is 27 pages and involves approximately 3 ‘responses’ from each philosopher.

Continuing in my justification and explanation of the interdisciplinary methodology I employ in this study, I refer to Inge Konik's PhD-thesis (2015:9), where she highlights the views of Australian sociologist Raewyn Connell:

...Connell identifies academic insularity as a major impediment. Connell proposes that sociology should expand its horizons, for instance by including work on the relation between economics and cultural transformation... Connell stresses that for sociology to remain strong, 'it must address major questions about the social world now coming into existence'...

Connell is of course commenting from within the academic sociological arena, but her remarks are relevant well beyond that realm. A brief look at the contents page of this study will reveal 'major questions about the social world now coming into existence'; a further look at the headings of sub-sections will show linkages between ecological degradation and economic (industrial) activity; between economics, religion, Science and Technology; between economics and politics; between philosophy and ecology; and so on. Considering that my focus in this study is partly the dominant, "established model of humanity" or "humanity as it has been historically constituted"⁴⁰, then the following observations on interdisciplinarity from Konik (who refers to several other thinkers in the following quotation) are extremely relevant to my methodology:

An inherent danger too, pointed out by the Marxist author J. D. Bernal, is that the social sciences can be 'reduced almost to impotence through the fear that they might be used to analyse and alter the economic and political bases of capitalism'. The environmental sociologists John Bellamy Foster, Brett Clark and Richard York argue in direct reference to Bernal's work, that the critical political potential of the social sciences often is neutralized by these sciences being 'seriously circumscribed by and often directly subservient to the established order of power.' This is all the more reason for transversal alliance building between different academic disciplines. (Ibid)

'The established order of power' clearly resonates with the concepts of the 'the established model of humanity' and 'humanity as it has been historically constituted' – concepts I will discuss extensively in Chapter 7, specifically with a view to showing that these concepts broadly demarcate the arenas from which the (Promethean) attitudinal causes of the ecological crisis emerge. A flexible interdisciplinary approach is therefore a suitable one considering that I aim partly to challenge aspects of the established order of power, and explore alternatives to it.

Overall, I aim to establish a broad explanatory framework in which the physical and attitudinal causes of the ecological crisis are identified, and in which the attitudinal factors are critically orientated; a framework in which the perpetuation mechanisms of the ecologically-problematic dispensation are identified and critically orientated; a framework in which examples of alternatives (and permaculture is here included alongside the focal areas of Chapter 5) to the problematic phenomena are identified; and a framework in which the role of philosophy is contextualised in light of the themes, issues and information that arise throughout earlier parts of the research process. In this manner I aspire to be part of the 'transversal alliance' referred to by Connell.

⁴⁰ These phrases are of central importance in Chapter 7.

Introduction and background

In the year 1859 the English philosopher, political economist and civil servant John Stuart Mill saw his book *On Liberty* published. In it he points out the importance of “experiments of living”:

As it is useful that while mankind are imperfect there should be different opinions, so is it that there should be different experiments of living; that free scope should be given to varieties of character, short of injury to others; and that the worth of different modes of life should be proved practically, when any one thinks fit to try them.

Mill’s considered position could not be clearer: if you do not hurt anybody else in your endeavours, then you should be free to think and do whatever you like. This indeed sums up the concept of ‘negative freedom’ or ‘negative liberty’: “One has negative liberty... when there is an absence of external interferences to one’s doing what one wishes – specifically, when there is an absence of external interferences *by other people*”⁴¹. Mill was concerned that the ‘tyranny of the majority’⁴² – or rather, that the tyranny of those “who succeed in making themselves accepted as the majority” – was eroding people’s freedoms in the negative sense to which I have just drawn attention. Freedom increasingly was becoming ‘positive freedom’, where “one has the opportunity and ability to do what one wishes”⁴³, but where the opportunities are invariably delineated by institutions or organisations such as the state. I must therefore add that one has positive liberty when one has the opportunity and ability to do *what has been deemed as acceptable to do* by the State or some other institution, organisation, or dominant societal, political, economic or *attitudinal*⁴⁴ force. Mill’s project in *On Liberty* was partly to situate the broad concepts of liberty and freedom on a spectrum and thereby emphasise that all liberties and freedoms are not equal – for example, that which a person does ‘freely’ under endorsement from a historically-dominant institution (such as State, Church, and economically influential entity) is not the same kind of liberty as the freedom to do whatever one pleases and be left alone so long as one does not injure another person.

It is not my intention to become reflectively engaged in the normative ethical activity of asking whether or not positive liberty is preferable to negative liberty. While it is possible to argue on the one hand that negative freedom is the freedom to starve, and on the other hand that ‘freedoms’ endorsed by specific institutions with clear vested interests and agendas are technically no freedoms at all, the answer perhaps lies in the middle of the two extremes, and this topic as ever remains a fertile one for consideration and discussion. For the initial purpose of this introduction, however, I would like to ask, to what extent is it possible to exercise freedom in its negative sense in contemporary society? By contemporary society, I mean specifically the advanced, consumer, competitive, Capitalist, industrial, Democratic, dominion-driven dispensation, an acronym for which is ACID, one I have adopted from Kvaloy via Hoyer (see Chapter 3) and adapted slightly⁴⁵. Shortly after a person is born, he or she is given an identity number, national security number, national insurance number, or whatever the number is called in the country in which a person is born. This number ‘plugs’ one into a socio-political and economic system where invariably fiat currency intermediates almost all activity, and as I show in Chapter 2, fiat currency is debt-based and inherent

41 <http://www.iep.utm.edu/libertar/> accessed 15 February 2017.

42 I explain and explore the notion of the tyranny of the majority in Chapter 4, sub-section 4.2, called ‘Mill’s dangers of democracy’.

43 <http://www.iep.utm.edu/libertar/> accessed 15 February 2017.

44 ...in the sense of a force that shapes or influences attitudes.

45 I comment on this acronym, as well as my adaptation of it, in the section called ‘Comments on some central terms’.

to it is the need to pay back the debt created the moment money is issued. This is one reason why in ACID a person will never be allowed to exercise negative liberty: there is always a tax-person, a banker, a bureaucrat, an inspector, an auditor, or any of ACID's henchmen knocking at the door, so to speak, to keep the cogs of a debt-based economy turning – one is never left alone to do as one likes, free from interference by other people, people who generally represent the 'interests' of 'the system'. These interests (of which economic control is only one) are regurgitated in various forms via the corporate-owned mass media, as Chomsky and Herman remind one in *Manufacturing Consent: The Political Economy of the Mass Media* (1988:306): the mass media "are effective and powerful ideological institutions that carry out a system-supportive propaganda function by reliance on market forces, internalized assumptions, and self-censorship, and without overt coercion" – this topic is so well explored in the academic world that I deem it unnecessary to include extensive information related explicitly to it in this study, though I refer to the role of the mass media briefly in sub-section 4.2. I have chosen to explore various other 'ACID perpetuation mechanisms' in Chapter 4, ones that I feel are in need of exploration in light of the broad context I establish in this study: Mill's dangers of Democracy, Democracy in a 'free-market' neoliberal Capitalist system, Marcuse's one-dimensionality, Deleuze's societies of control, and Princen's 'traffic control measures'. It is clear to me (based on the research I present in Chapter 4) that this is a system that forces upon a person a narrow positive freedom but marginalises chances of exercising negative freedom, and I suspect that Mill saw this coming over a century ago.

When discussing the topic of the debt-based economic system I referred to above, interlocutors have often responded in defence of the system by saying that it works, that despite imperfections it is the best system human beings have managed to construct after centuries of 'progress' through previous forms of economic activity. They point out that the technology I use, for example the computer I used to type this study, is all a product of the system and that I should be grateful for it all. Strange then that the imperatives accompanying ACID – expand, consume, 'progress', increase, dominate, compete, accelerate, develop, and so on (see Chapter 3 for research related to these imperatives and other ecologically-problematic qualities of historically-dominant shapers of discourse) – have led the human species, as well as the ecosystems constituting most of life on planet Earth, to an unprecedented crisis. In Chapter 1, I collate information that shows unambiguously that there is an ecological crisis, and in Chapter 2 that specific human practices in the forms of specific industries are direct causes of the phenomena constituting the ecological crisis. Clearly, then, some interlocutors have very narrow definitions in mind when they claim that the contemporary globalised economic system 'works' and is 'the best' system human beings have been able to create. The computer they tell me to be grateful for, they probably do not realise, is also designed to break after a specific period of time (as is the case with all products of Technology made for mass consumption) so that the corporation that produced it can continue accruing massive profits (and also 'play its part' in keeping the cogs of the economy turning). This is known as planned obsolescence⁴⁶, something that engineers and scientists are employed to 'perfect' despite the obscene ecological impact of a world full of Technology-designed-to-break all the time for the sake of (debt-based) economic activity. In Chapter 2, I reveal some of these obscene ecological impacts of several large-scale industries now found all over the world and which seem inseparable from the broadly-accepted notions of 'development' and 'Democracy'. And this links back to what I have said

⁴⁶ See sub-section 5.8 on the Zeitgeist Movement

about system-endorsed positive ‘freedoms’, specifically that they are exclusively prescribed by a dominant institution – in contemporary Democracy (which I characterise in Chapter 4 as a globalised political and economic system – the best system “money can buy”⁴⁷– led by the USA), freedom is the positive freedom *to develop*, as Konik (2015:15-16) points out via Wolfgang Sachs:

...Truman promoted ever increasing production and technological advancement as key to the well-being of all nations, regardless of their economic, political, social and cultural differences, nuances, and dreams. Sachs holds that this was the first time that a “world view” was prescribed in which “all the peoples of the earth were to move along the same track and aspire to only one goal – development”.

I started this introduction with reference to the year 1859, the year that Mill’s *On Liberty* was published. It is perhaps an eerie coincidence that in the same year the first commercial oil well went into production in Titusville, Pennsylvania, USA. The world’s population of human beings at that time was 1 billion. Commercial oil provided the means by which human beings would multiply their population seven-fold in an evolutionary-historical blink of an eye, but it did not provide the motive. The motive can be traced to specific human attitudes, to the kinds of thoughts that human beings entertain about the relationship between themselves and the rest of the world, because what “people do about their ecology depends on what they think about themselves in relation to the things around them” (White 1971:11). Christianity, having institutionally dominated the direction of human thought for well over a millennium and having persecuted, oppressed and often obliterated⁴⁸ that which was alternative to it, spread the imperative of dominion-over-the-earth, widely eliminating alternative approaches to living and thereby starting the first of the homogenisation projects in the history of Western-dominated civilisation on which I focus, which via globalisation is now all of civilisation. Reductionist Science continued the project of spreading the dominion imperative, even though eventually it would abandon the notion of God. Descartes, for example, anticipating the flavour of scientific inquiry as it would develop out of the period of Christian domination, writes in the *Discourse on Method* (1972:119) that he looks forward to the time when the new Science will render humans “masters and possessors of nature” – unsurprisingly, Descartes was a devout Christian. Francis Bacon, a figurehead in the Scientific arena who happened also to express Christian sentiments, stated that the “secrets of nature are better revealed under the torture of experiments than when they follow their natural course” (2008:93). In light of these and other similar Scientific sentiments, Pierre Hadot (2008: 123) states the following:

What we must say, I think, is that with Francis Bacon, Descartes, Galileo, and Newton, a definitive break... may have taken place, and these scholars discovered the means of progressing in a decisive and definitive way in this project of dominating nature, limiting themselves to the rigorous analysis of what is measurable and quantifiable in sensible phenomena.

I explore aspects of Christianity and Science regarding the consequences they have for attitudes toward ecology in Chapter 3. I include in Chapter 3 an equal focus on Technology and Capitalism as central shapers of discourse that have spread ecologically-problematic attitudes across the globe, attitudes that ‘steer’ the human actions that result in ecologically-problematic outcomes. Suffice it so say for now that in ACID, the creation and use of Technology are intimately connected with the Scientific focus on “what is measurable and quantifiable in sensible phenomena” (Hadot, *Ibid*) as per

47 ...to quote Peter Barnes, as I do in Chapter 4.

48 See the following source for an example of the Christian prosecution of the Cathars, Albigensians, and Bogomils: <http://www.iranicaonline.org/articles/cathars-albigensians-and-bogomils> accessed 22 May 2017.

the use of instrumental Reason identified by Horkheimer and which I discuss in Chapter 3. In the context of this study, instrumental Reason can be thought of as the application of reason for purely and exclusively technical-pragmatic purposes – more on this in Chapter 3, but for now let me point out that Horkheimer (1947:104) does offer a glimpse of the relevance of the pragmatic and instrumental attitude in the context of the ecological crisis: “Modern insensitivity to nature is indeed only a variation of the pragmatic attitude that is typical of Western civilization as a whole”. And Heidegger’s analysis of Technology as something essentially entangled with the process of ‘Enframing’ reveals an attitude toward nature where it is reduced to nothing but a ‘standing reserve’ of resources for human use – this too I will discuss in Chapter 3. Regarding Capitalism, the observations of only one central critic of Capitalism need be mentioned for my purposes in this introduction – Joel Kovel. He points out (2002:48) that Capital

employs purely quantitative indices such as gross domestic product (GDP) because they are convenient indices of accumulation. Scarcely a critic of the ecological crisis has refrained from commenting upon the stupid brutality of this number, which reduces the living and the dead alike to the common denominator of what can be extracted from their commodification. It is necessary, though, to see thinking in terms of GDP as no mere error, but the actual logic of the reigning power...

My analysis of the constituents of the ecological crisis (Chapter 1), the direct physical causes of the crisis (Chapter 2), the attitudinal causes of the crisis (Chapter 3), and the perpetuation mechanisms that prevent social change (Chapter 4), all constitute the problem section of this study. The focal areas of Chapters 3 and 4 paint a detailed picture of a dispensation in which the possibility of conducting ‘experiments of living’ (a concept I referred to at the start of this introduction) is marginal, even negligible, because dominant shapers of discourse paved the way for a global platform characterised by socio-political and economic homogeneity that dictates the extent and limits of ‘freedom’. To be sure, this is a very confined, limited and narrow form of positive freedom – a person will not be left alone, free from interference from other people in this system. Furthermore, this almost all-encompassing system, ACID, which is a result of certain problematic attitudes toward nature and simultaneously a perpetuator of those attitudes, is a disaster for the ecology of the planet – I focus on the ecological details in Chapters 1 and 2.

I have just argued that the ecologically-problematic, globalised dispensation of ACID is one characterised by various traits that have the impact of perpetuating the globalised dispensation of ACID, and accordingly that alternatives to ACID – or experiments of living – are thereby marginalised or negated. With this in mind, consider very broadly the philosophical notion of dialectical process. For my purposes, I will describe a dialectical process very simply (in broadly Hegelian terms) as a process consisting of three parts: a thesis, an antithesis, and a synthesis. A thesis is an idea; in the spirit of simplicity, I will use the example of ‘self’ as a thesis. In this limited example, the antithesis of ‘self’ is ‘other’. A synthesis of the two might be ‘community’. The dialectical process therefore is a model often used to describe how change occurs: change of a concept (self – other – community), a society, or any system. I wish to make only the following point about the dialectical process I have just exemplified: the process requires that the thesis and the antithesis ‘merge’ or ‘combine’ or ‘overlap’ at some point, or else a synthesis cannot be arrived at – in other words, something new cannot emerge. In Hegelian logic the ‘synthesis’ will, in its turn, become a ‘thesis’, and by being ‘negated’ provoke a new antithesis, synthesis, and so on; to pursue this is not my purpose here, however.

It is certainly the case that ‘new things’ have emerged (and continue to emerge) in and from the dispensation of ACID, the system which I have argued is characterised by various traits of the historically-dominant shapers of discourse – Christianity, Science, Technology, Capitalism, and to a lesser extent Democracy. But the ‘new things’ to which one is perhaps able to refer are more than likely completely compatible within the confines of consumer Capitalism, ‘pragmatic’ Technology, and reductionist Science – some of the very shapers of discourse under scrutiny in this study. However, I must ask: have any of the dominant system characteristics *really changed* since the dominion-enforcing reign of Christianity, since the ubiquitous expansion of pragmatic Technologies, since the compartmentalising materialism of reductionist Science, and since the profit-addiction inherent to Capitalism? One might perhaps be able to refer to isolated examples where a considerable change occurred, examples like the end of race-based slavery, or when the right to vote for leaders was granted to all people. However, these remain isolated examples. I have chosen a context of considerable proportions, namely the ecological crisis, as a reminder that *systemically* nothing has really changed – and by *systemically* I mean the advanced competitive consumer Capitalist industrial Democratic dominion-‘crazed’ dispensation that continues in the same direction as it has for centuries, albeit at an exponentially accelerated pace – the ecological crisis is a severe reminder of this. The characteristics of the system remain the same ones that have been ecologically-problematic since they became dominant, and I explore some of these characteristics and their development in Chapter 3. Indeed, mechanisms exist that *prevent change of the characteristics* that I have identified as ecologically-problematic, and I explore some of these mechanisms in Chapter 4.

The relevance of my reference to the dialectical process should now be clear: in ACID, the dialectical process is ‘frozen’ in any large-scale sense via an intricate interconnection of *dominant* physical and non-physical system components characterised by competition, dominion, utility, and a variety of other characteristics I call Promethean⁴⁹ (under inspiration from Pierre Hadot), listed at the end of Chapter 3. This, of course, is a topic open to discussion and debate, i.e. the topic of the extent to which ‘ACID does dialectic’, so to speak – in this study, I clearly espouse support for the view that in any large-scale sense of the concept of dialectic, ACID ‘does not do change’, so to speak. In Hegelian terms – if these *must* be adopted – one might say that the system has become so homogenised that any antithesis to a thesis is an antithesis only in name, and that the synthesis (or every synthesis, in succession), has incrementally ‘ironed out’ all genuine antitheses, so that only qualitative homogeneity remains. Or, using the well-known formula for encouraging originality, coined by Edward de Bono (1970), ‘lateral thinking’, in the present encompassing system the only lateral thinking that is tolerated is the kind that does not question the system itself, but merely promises its more efficient operation. In an interview⁵⁰, Manuel Castells, author of *Rise of the Network Society (2010)*, offers a glimpse of support for my contention here – that ACID ‘does not do change’ – when he says that “the political institutions are impervious to change”, and of course the political institutions are central in and for ACID (I explore the problematic relationship between Capitalism and Democracy in Chapter 3). Rosi Braidotti (2013:58) also speaks about the “inertia of established mental habits” in a manner that suggests a stagnation of the dialectical cycle:

49 I discuss the use of the term Promethean in the ‘Comments on some central terms’ and the ‘Aims and methodology’ section.

50 <http://news.bbc.co.uk/2/shared/spl/hi/programmes/analysis/transcripts/151012.pdf> accessed 22 February 2017

I do think that one of the most pointed paradoxes of our era is precisely the tension between the urgency of finding new and alternative modes of political and ethical agency for our technologically mediated world and the inertia of established mental habits on the other.

And Foster, Clark and York refer to a “prevailing hierarchical social order” with a “commitment to stasis in its fundamental social-property relations” (2010:17), a social order where “those on top have a vested interest in blocking fundamental change” (2010:27).

So at a very superficial level I agree with the broad concept of ‘the end of history’, a concept attributed mainly to Francis Fukuyama⁵¹ – but only in the sense that the concept highlights an ideological *goal* attributed to the Promethean and its contemporary manifestation as ACID, rather than as an accurate depiction of the normative (or desirable) ‘positive status’ of liberal Democracy (let alone the capacity to put an arbitrary stop to the historical process itself) , which Fukuyama⁵² is clearly in favour of:

Writing in the twentieth century, Hegel’s great interpreter, Alexandre Kojève, asserted intransigently that history had ended because what he called the “universal and homogeneous state” – what we can understand as liberal democracy – definitely solved the question of recognition by replacing the relationship of lordship and bondage with universal and equal recognition. What man had been seeking throughout the course of history – what had driven the prior ‘stages of history’ – was recognition. In the modern world, he finally found it, and was ‘completely satisfied.’ This claim was made seriously by Kojève, and it deserves to be taken seriously by us.

Leaving aside the question, whether this interpretation is compatible with Hegel’s own work (which it arguably is not, considering the difference between Hegel’s ‘logic’ and actual history) Fukuyama does indeed take Kojève’s claim seriously, and espouses support for liberal Democracy, while I do neither of these things due to the inherently problematic characteristics and mechanisms of ACID I write about in this study. I show that Promethean characteristics, qualities, and attitudes result in actions that marginalise alternatives to the Promethean, and also result in the construction of dominant system ‘mechanisms’ that prevent alternatives from arising. Put differently, the Promethean is like a ruthless dictator, whose ‘success’ is attributable to his or her might and dominance (and who accordingly eliminates opposition), rather than like a meritocratic leader who facilitates any kind of promising system-wide change.

I have argued (and I present information in this study to support the argument) that the dominant characteristics of ACID are ecologically-problematic and that mechanisms exist that prevent social and economic change, hence my claim that ACID is something in which the dialectical wheel is prevented from spinning in any real manner. However, just because ACID ‘does not do dialectic’ does not mean that ‘antitheses’ are not available. I use the word antitheses very loosely here; better for my purposes would be the phrase ‘alternatives’. I turn my attention in Chapter 5 to such alternatives, ones characterised by qualities that would clearly be unsuited in the broad arenas of ACID. One example is the Occupy Movement that occurred primarily in the years 2011-12, a movement in which attention was drawn to the rule of what was referred to as the one per cent – the one per cent of the world’s population that owns and controls considerable portions of the world’s wealth and uses it to reap massive profits, usually via socially-problematic, ethically-

51 <https://www.marxists.org/reference/subject/philosophy/works/us/fukuyama.htm> accessed 12 March 2017

52 <https://www.marxists.org/reference/subject/philosophy/works/us/fukuyama.htm> accessed 4 April 2017

problematic, and ecologically-problematic means. I explore aspects of this movement in Chapter 5; it is clear that some of the characteristics of the movement are entirely different to those common to ACID, something which Noam Chomsky comments on: the movement “spontaneously created something that doesn't really exist in the country [i.e. the USA]: communities of mutual support, cooperation, open spaces for discussion... just people doing things and helping each other”⁵³. This is an important observation in the context of this study: people cooperating and helping each other, i.e. not competing. The movement offers such glimpses of manifestations of alternative attitudes, alternative attitudes I am convinced are ones that need to be paid attention to when addressing the question of what to do in light of the ecological crisis. Broadly, these alternative attitudes are ones I call Orphic⁵⁴ (again under inspiration from Pierre Hadot).

Other areas of focus in Chapter 5, to differing degrees, espouse attitudes that are in contrast to the problematic ones I identify in earlier parts of the study, and I offer these attitudes as ‘suggestions’ for further exploration as a ‘response’ in the context of the ecological crisis. A certain indulgence on the part of the reader is required here: indulgence in the form of a kind of ‘suspension of disbelief’ regarding some of these ‘suggestions’. Without it, the reader would not, for example, give someone like Graham Hancock (whose important work has, despite some striking recent confirmations by other scientists, been largely sidelined by mainstream scientists), a chance to convince her or him. I will here describe as briefly as possible some of the focal areas of Chapter 5; I will comment on the ‘ecological implications’ of these focal areas in Chapter 5. ‘Older cultures’ like the Kogi, the Ik of Uganda, the Navajo, the Hopi, the Cree, Ojibwa and the San (listed by Thom Hartmann in his *Last Hours of Ancient Sunlight* (1998:154), all share the attitude of deeply respecting the interconnection of the human and non-human world, and accordingly see human beings as a reciprocal part of nature. Paul Hawken, in his *Blessed Unrest*, writes about an unnamed movement consisting of between one and two million organisations and groups all working toward justice in various spheres, and though disparate, these organisations and groups share the vision of an ecologically, socially, politically, and economically sustainable dispensation. Rupert Sheldrake proposes a non-reductionist scientific model he calls morphic resonance, where characteristics of a species are shaped by non-physical fields rather than purely physical and quantitative genetic processes. Graham Hancock identifies contemporary civilization as one with amnesia, where what is forgotten is a large and crucial chunk of human history where humankind reached a sophisticated level of civilisation with its own knowledge and technology; despite its sophistication, the civilisation was unable to survive a cataclysm, but survivors of the cataclysm initiated megalithic stone building projects to convey to future civilisations some important messages from vast antiquity. Charles Eisenstein identifies an approach to human economic activity he calls sacred economics, an approach that is unrecognisable in character and in social and ecological impact when compared to the debt-based and growth-focused economic system of contemporary civilisation. The Zeitgeist Movement is one characterised by a strong sense of technological and scientific pragmatism, yet manages to align such pragmatism with sustainable and ecologically-sensitive approaches to providing for physical human needs in a context of finite ‘resources’, and non-physical needs via (partly) the maintenance of healthy ecologies.

53 https://www.democracynow.org/2012/5/14/chomsky_occupy_wall_street_has_created accessed 20 February 2017

54 I discuss the use of the term Orphic in the ‘Comments on some central terms’ and the ‘Aims and methodology’ section.

What I am *not* able to offer in Chapter 5 is a clear route for transition, and by this I mean a transition from an ecologically-problematic dispensation characterised predominantly by Promethean attitudes, to an ecologically-sustainable dispensation characterised by Orphic attitudes. Indeed, during my research of the focal areas of Chapter 5, I never found any convincing information pertaining to the means by which transition could occur. This is perhaps a common limitation of the different areas on which I focus in Chapter 5, and if I were to offer nothing in the form of ‘actionable’ steps toward solutions, then it would be a limitation of this study as well. However, this is where permaculture becomes an invaluable addition in the context of this study. I explore conceptual and practical aspects of permaculture throughout Chapter 6, but suffice it to say for now that permaculture is a *design system* motivated by the imperative for human beings to co-exist in a sustainable manner with the non-human world. Considering what I have said about transition, permaculture plays a crucial role because it offers very specific principles that can be applied by an individual, a family, a community, a village, a city, a country... and I dare to suggest even by all the countries constituting the human civilisation. There is, however, no one-size-fits-all way to implement permaculture: in permaculture, every environment is a manifestation of different natural features, and often synthetic features too, that need to be observed, and in which human beings need to interact and make small and slow changes, accepting feedback, valuing the marginal, and so on – these latter clauses are allusions to specific permaculture principles. There are twelve of them, all of which I discuss and reflect on in Chapter 6, and all of the principles are *context specific*. Permaculture, I contend, is a context-specific, adaptable, patient, accessible, realistic, down-to-earth, actionable approach to creating change. It is an embodiment of the awareness of the need to carefully design and construct alternatives to the systems of ACID from the ground up via ecologically-respectful means. So when faced with the question of how to transition from ACID to something sustainable and ecologically-respectful, the answer is not to be found in something as complicated and perhaps idealistic as voting for a ‘green’ political party⁵⁵, but rather in the assembly and use of a compost toilet; in the planting of fruiting trees; in the catching and storing of rain-water; in growing some herbs and edible leaf-crops near the home kitchen; in getting rid of ‘the television’; in purchasing one or two solar panels and one or two deep-cycle batteries and learning how to adapt one’s lighting and (for example) computer-powering needs to this small solar-power setup; in being creative with the ‘waste products’ that usually end up in the bin and making useful items from them; in keeping chickens for the purposes of producing eggs for protein in the diet; in sourcing local fresh produce and meat wherever possible; in learning the edible properties of ‘weeds’ and incorporating ‘weeds’ into one’s diet; and so on. These may seem like small steps, but one need not be part of some bigger social phenomenon, or be rich, or be talented, or well-connected socially, in order to take the steps – and this simplicity is part of what makes permaculture very appealing in the context of the socio-political and economic complications that underpin the ecological crisis. Remembering the opening remarks to this introduction about positive and negative freedom, I should point out that permaculture is one of the few arenas in which one can learn how to exercise negative freedom – in the implementation of small, slow, sustainable, synergistic systemic solutions that together add up, with the consequence that the need to depend fully on the homogenised and homogenising systems of ACID is thereby reduced. I am not for a moment suggesting that permaculture can feed the world – perhaps it could, but the world’s 7.4 billion people grew to that number because of the widespread commercialisation of fossil-fuels since

55 ...because, as I show in Chapter 4, there is only one party – the Business party. This is Chomsky’s remark.

the second half of the 19th century (when the population of human beings was only 1 billion; I discuss this in Chapter 3), but the fossil-fuel system is now unanimously acknowledged to be inherently unsustainable – something that uses a finite resource can never exist infinitely⁵⁶. I add that not only is it unsustainable, but it is also the physical means by which the Promethean attitudes could accelerate in their historical spread across the globe – I address this process in Chapter 3. If something is inherently unsustainable then it must come to an end, so here I draw obvious attention to the question, *then what?*⁵⁷ And this is when permaculture can be turned to – but never in a one-size-fits-all manner, as I have already commented. On smaller scales, if one wishes to conduct small ‘experiments of living’, then permaculture is a great place to start, as it offers numerous options to put ecologically-sensitive ideas and attitudes into practice. I add in Chapter 6 ‘down-to-earth’, ‘low-tech’ examples of how I have implemented permaculture in my own life and thereby managed to exercise some level of autonomy in the face of the seemingly-overwhelming juggernaut that is ACID.

Clearly, a ‘working dichotomy’ has been foregrounded: a dichotomy between ecologically-problematic attitudes and ecologically-respectful attitudes; a dichotomy between the Promethean and the Orphic. I argue in this study that the Promethean, due to its characterisation in part by dominance, its focus on having dominion over all of the non-human world, and a variety of other characteristics, has marginalised the Orphic, whose various characteristics have made it easy to be dominated. It is with the dichotomy (on which I comment extensively in the Comments on Some Central Terms section, as well as the Aims and Hypotheses section) between the Promethean and the Orphic in mind, as well as with the broad context of the ecological crisis as I explore it in this study, that I turn to the question of the role of philosophy. Two texts in particular stood out to me during my research into the role of philosophy. The first is a text called *Philosophy in the Present*, structural aspects of which I have already commented on in the Summary section. In the text, Badiou and Žižek offer their answers to the question of the role of philosophy in the present, and both philosophers make it perfectly clear that philosophy occurs when faced with incommensurability, or in other words, when insurmountable barriers to dialogue are encountered: Žižek explicitly says that philosophy is *not* a dialogue (2009:50). I list most of the characteristics of philosophy I take from *Philosophy in the Present* in the headings of the sub-sections of the first half of Chapter 7: philosophy as the creation of new problems; philosophy as a process of cutting through particulars to reach the universal; philosophy and incommensurability, mutual exclusivity, and paradoxical relations; philosophy and the creation of new problems; philosophy and changing the concepts of the debate; philosophy and no certainty of ‘being at home’, internal foreignness, and the breakdown of organic society; philosophy as the Elucidation of choice; philosophy as the shedding of light on the distance between power and truths; philosophy and the redefinition of human nature; philosophy as singularity participating in universality; philosophy and preconceived ideas of human nature; philosophy and humanity as it has been historically constituted; philosophy and the established model of humanity; philosophy and the ‘transformation of life’. Each of these focal areas, as well as others I have not listed here, opens up possibilities for insight on various aspects of Chapters 1 to 6 of this study. For example, “humanity as it has been historically constituted and defined” is a phrase that Badiou (2009:74-75) uses in the following: “Each time that philosophy confines itself to humanity as it has been historically constituted and defined, it diminishes itself, and in the end

56 See Diamond 2005:490 – “While there has been much discussion about how many big oil and gas fields remain to be discovered, and while coal reserves are believed to be large, the prevalent view is that known and likely reserves of readily accessible oil and natural gas will last for a few more decades”.

57 Some people respond to the question by pointing out that ‘Technology will save us’ – I address this outrageous fallacy explicitly in Chapter 3.

suppresses itself. It suppresses itself because its only use becomes that of conserving, spreading and consolidating the established model of humanity". I have already suggested in this introduction that various shapers of discourse (on which I focus mainly in Chapter 3) have dominated historically: the attitudes of domination and dominion partly characterise them, propelling their dominance and dominion, and via their dominance and dominion, they homogenised the historical playing field, resulting in ACID, the Promethean writ large. In other words, the Promethean 'model of humanity' is "humanity as it has been historically constituted" (Ibid). And Badiou makes it clear that when philosophy confines itself to, conserves, spreads, or consolidates humanity as it has been historically constituted, it diminishes and suppresses itself. An obvious route, then, toward practicing philosophy in a manner where it is not diminished or suppressed, is to broaden focus and bring (incommensurable) alternatives 'into the mix', so to speak – and of course, I focus on alternatives in Chapters 5 and 6. In other words, the historically dominant Promethean may be positioned against the Orphic. Accordingly, the dialectical wheel can turn properly: the dominant theses of the Promethean will be posed against the 'antitheses' (I prefer 'alternative ideas') of the Orphic, and synthesis can potentially occur.

The second text to which I refer regarding the question of the role of philosophy in the context of the ecological crisis as I have explored the context, is Hadot's essay 'Philosophy as a way of life'⁵⁸. The purview here is mostly different from that in *Philosophy in the present*, with the occasional overlapping implication. Hadot traces the notion of philosophy as a way of life as it was 'approached' in ancient times – an approach that I contend is of considerable value in the context of the ecological crisis as I explore it in this study. For example, Hadot (1995:254) quotes Bergson to convey the character of 'habitual perception':

Life requires that we put on blinkers; we must not look to the right, to the left, or behind, but straight ahead, in the direction in which we are supposed to walk. In order to live, we must be selective in our knowledge and our memories, and retain only that which may contribute to our action upon things.

This is one manner of perception where human beings retain knowledge *which may contribute to our action upon things*, and Hadot (Ibid) refers to it as "utilitarian perception". I do not suggest that utilitarian perception is 'bad', because certainly everyday pragmatism is necessary in the pursuit of food, shelter, and so many other material needs. But the Bergson quote does suggest an exclusive pragmatism, and this is the realm of the Promethean, where the 'objects' of nature are valued *only* for their instrumental value and not their inherent value – and ACID is the contemporary 'manifestation' or embodiment of this hegemonic realm. I develop these and other related themes at various stages in this study, but in the second half of Chapter 7 I show that the concept of philosophy as a way of life nurtures a form of perception where the inherent value of extant things is foregrounded, where human attitudes align with an ecologically-respectful 'cosmic consciousness', and where human actions accordingly are aligned with qualities of the Orphic as they are identified in this study. By exploring philosophy in its 'format' I have just commented on, I hope to be able to offer a refreshing method that can be used to approach and address the worrying issue of the ecological crisis, a crisis which hitherto has clearly not been adequately addressed considering the extent to which the crisis is daily exacerbated.

⁵⁸ I do draw from a second essay of his as well, 'The sage and the world', but mostly in connection to the central ideas of the former essay. Both essays appear in the book called *Philosophy as a way of life*, and 'The sage and the world' certainly leads thematically into 'Philosophy as a way of life'.

Chapter 1

What constitutes the ecological crisis?

1.1 Introduction

In this chapter I aim to establish themes corresponding to information about the ecological crisis. The approach is descriptive in the sense that specific information will be collated. The chapter is also a factual platform of information and themes to which I will refer in later chapters of the study. What is collated in this chapter therefore serves as a starting point from which to establish links to focal points in Chapter 2; this linking method will occur throughout the study, and in this manner it works transversally, as explained in the 'Aims and methodology' section.

Attention must be drawn from the outset of this chapter to the philosophical context of this study. In the academic Sciences, a researcher understandably must focus extensively on the accuracy of the primary data being collected. This is of course true for the Humanities, but in order to function at the theoretical and hermeneutic level, primary data is often acquired from various secondary sources to be positioned in the theoretical and hermeneutic framework of the study. I realise that the quantitatively-focused members of the academic world might point out that this is a considerable limitation in the Humanities in general and in therefore in the particular instance of this study. I therefore make no claims that in this chapter I am conducting a 'neutral' activity of primary data collection⁵⁹. Instead, as is often the standard in the Humanities when data is used, it comes from other sources; i.e. the data used is taken from secondary sources.

Importantly, in this chapter I am looking for information that does develop the claim that there is an ecological crisis – that the proverbial nest is being fouled. Some commentators question the notion of an ecological crisis, casting doubt on data used and, more often, the predictions made by scientists whose results indicate deterioration in a given arena of the Earth's ecology. I have only found this to be the case when it comes to the topic of anthropogenic climate change, where one often encounters claims made by anthropogenic climate change deniers, mainly the claim that there is no consensus about the phenomenon – I address this issue at the end of sub-section 1.3 of this chapter. I deliberately let the topic of anthropogenic climate change occupy only a few pages in this chapter, thereby emphasising that anthropogenic climate change is only one of numerous examples of phenomena constituting the ecological crisis. Taken together, all the sub-sections of this chapter reveal a much broader backdrop: a backdrop of massive ecological deterioration spanning across several ecological 'indicators'. One need not focus on predictions about the fate of the planet's ecology – the data collated in this chapter shows unambiguously that the well-being of the proverbial nest I referred to earlier is already thoroughly jeopardised, with accelerating levels of destruction occurring across all 'ecological indicators'.

⁵⁹ If, indeed, such neutrality is possible, even in the field of purported 'objective' science, considering the extent to which the human observer influences the outcome of experiments, as illustrated by Heisenberg via his uncertainty principle. Later in this study I explore the characteristics of reductionist Science, which I argue is the form of science that 'grew out of' attitudes associated with Christianity, for example the attitude that humankind has dominion over the natural world; I develop this theme extensively in Chapter 3.

1.2 Loss of biodiversity

The term 'biodiversity' denotes variety of life, be it on Earth at large or in specific ecosystems. Biodiversity is crucially important: each life-form in a given system plays a part in maintaining the balance of that system, and the loss or considerable decrease of any one kind of plant or animal life has an impact on the system as a whole. However, as Kovel (2006:19) points out, at the start of the 21st Century, "species were vanishing at a rate that has not occurred in 65 million years", an allusion to the mass extinction of life on earth and which ended the reign of the dinosaurs.

According to the World Wildlife Foundation's 'Living Planet Report' of 2012⁶⁰, the "global Living Planet Index declined by almost 30 per cent between 1970 and 2008". The Living Planet Index is a measure of the state of the planet's biodiversity, and in the same report the WWF lists several more alarming index trends for the same period, i.e. between 1970 and 2008: the global tropical index declined by 60 per cent; the global terrestrial, freshwater and marine indices all declined, with the freshwater index declining the most, by 37 per cent; the tropical freshwater index declined even more precipitously, by 70 per cent.

Human activity is the cause of the catastrophic contemporary loss of biodiversity⁶¹, a statement that can be supported with reference to various scientific investigations. For example, in 1999 the 16th International Botanical Congress was held in St. Louis, Missouri, where approximately 5000 experts met to discuss issues surrounding plant life, its importance, and breakthrough research in the field of botany. An article by the Environment News Service summarises the meeting's main research themes, emphasising the central role played by human beings in diminishing the planet's biodiversity:

[H]umanity's impact on the earth has increased extinction rates to levels rivalling the five mass extinctions of past geologic history, transformed nearly half of Earth's land and created 50 dead zones in the world's oceans.⁶²

The Millennium Ecosystem Assessment report of 2005 reiterates the concerns of the 1999 Botanical Congress example: as stated on the website greenfacts.org⁶³, the MEA report "shows that human actions often lead to irreversible losses in terms of diversity of life on Earth and these losses have been more rapid in the past 50 years than ever before in human history". Jared Diamond, in his book *Collapse: how societies choose to fail or succeed*, adds the following (2005:488): "A significant fraction of wild species, populations, and genetic diversity has already been lost, and at present rates a large fraction of what remains will be lost within the next half-century". Diamond (2005:489-499) points out that references to loss of biodiversity often provokes the response, "Who cares? Do you really care less for humans than for some lousy useless little fish or weed, like the snail darter or Furbish lousewort?", but explains (2005:489) that elimination "of lots of lousy little species regularly causes big harmful consequences for humans, just as does randomly knocking out many of the lousy little rivets holding together an airplane". This is obviously not a good sign for human beings, or for the life forms that human beings are wiping out, or any life-form left alive on a planet that depends on a strong and vibrant biosphere.

60 http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/2012_lpr/ accessed 12 May 2014

61 I develop this theme extensively in Chapter 2.

62 <http://www.ens-newswire.com/ens/aug1999/1999-08-02-06.asp> accessed 12 May 2014

63 <http://www.greenfacts.org/en/biodiversity/index.htm> accessed 12 May 2014

This notion – that human beings are responsible for the accelerating collapse of various species (and by corollary, environments and ecologies too) of life on Earth, is something I will explore in much greater depth in Chapter 2.

1.3 Greenhouse gases, carbon emissions and climate change

Kovel (2006:1) points out that, compared to 1970, at the beginning of this century human “carbon emissions had increased from 3.9 million metric tons annually to an estimated 6.4 million – this despite the additional impetus to cut back caused by an awareness of global warming, which was not perceived to be a factor in 1970”. His statistics, as alarming as they are considering that they highlight the rapid increase in the level of carbon emissions in just 30 years, are out-dated – they reflect the state of carbon emission affairs in 2002, when the first edition of *The Enemy of Nature* was published. To put things into a more contemporary perspective, consider that in April 2014 the IPCC published a press release⁶⁴ stating that “greenhouse gases have risen to unprecedented levels despite a growing number of policies to reduce climate change. Emissions grew more quickly between 2000 and 2010 than in each of the three previous decades”.

Diamond (2005:493) has the following to offer on the topic of greenhouse gases:

Human activities produce gases that escape into the atmosphere, where they either damage the protective ozone layer (as do formerly widespread refrigerator coolants) or else act as greenhouse gases that absorb sunlight and thereby lead to global warming. The gases contributing to global warming include carbon dioxide from combustion and respiration, and methane from fermentation in the intestines of ruminant animals. Of course, there have always been natural fires and animal respiration producing carbon dioxide, and wild ruminant animals producing methane, but our burning of firewood and of fossil-fuels has greatly increased the former, and our herds of cattle and of sheep have greatly increased the latter.

The Living Planet Report⁶⁵ highlights the fact that the “consequences of excess greenhouse gases that cannot be absorbed by vegetation are already being seen, with rising levels of atmospheric CO₂ causing increased global temperatures, climate change and ocean acidification. These impacts in turn place additional stresses on biodiversity and ecosystems and the very resources on which people depend”. This is a mild statement from the Living Planet Report; other sources draw attention to the effects of climate change in ways that highlight further consequences, for example⁶⁶: climate change “poses a grave threat to humanity and has already damaged crops, spread diseases and increased acidity in the oceans. It could lead to wars and mass migration”.

The 2014 National Climate Assessment⁶⁷ is a report consisting of 30 chapters and brings together the work of several hundred experts in the field of climate change. For the sake of brevity, some of the summary points of the findings are listed here:

Human-induced climate change is projected to continue, and it will accelerate significantly if global emissions of heat-trapping gases continue to increase; Impacts related to climate change are already evident in many sectors and are expected to become increasingly disruptive across

64 ipcc.ch/pdf/ar5/pr_wg3/20140413_pr_pc_wg3_en.pdf accessed 13 May 2014

65 http://awsassets.panda.org/downloads/1_lpr_2012_online_full_size_single_pages_final_120516.pdf accessed 4 July 2014

66 http://www.thestar.com/news/world/2014/04/13/ipcc_report_greenhouse_gas_emissions_accelerated_in_past_decade.html accessed 13 May 2014

67 <http://www.climate-science-watch.org/2014/05/12/national-climate-assessment-key-findings-part-1/> Accessed 13 May 2014

the nation throughout this century and beyond; Climate change threatens human health and well-being in many ways, including through more extreme weather events and wildfire, decreased air quality, and diseases transmitted by insects, food, and water; Infrastructure is being damaged by sea level rise, heavy downpours, and extreme heat; damages are projected to increase with continued climate change; Water quality and water supply reliability are jeopardized by climate change in a variety of ways that affect ecosystems and livelihoods; Climate disruptions to agriculture have been increasing and are projected to become more severe over this century; Climate change poses particular threats to Indigenous Peoples' health, well-being, and ways of life; Ecosystems and the benefits they provide to society are being affected by climate change. The capacity of ecosystems to buffer the impacts of extreme events like fires, floods, and severe storms is being overwhelmed; Ocean waters are becoming warmer and more acidic, broadly affecting ocean circulation, chemistry, ecosystems, and marine life; Planning for adaptation (to address and prepare for impacts) and mitigation (to reduce future climate change, for example by cutting emissions) is becoming more widespread, but current implementation efforts are insufficient to avoid increasingly negative social, environmental, and economic consequences.

I feel the need to briefly address the claim made by anthropogenic climate change deniers or sceptics, that there is no consensus in climate change science, and more generally the claim that the some science 'disproves' the reality of anthropogenic climate change. I will begin by conceding that 'deniers' are correct if one considers 'consensus' to denote *100% agreement* throughout a field. Yet as pointed out again and again by various independent groups⁶⁸, "That humans are causing global warming is the position of the Academies of Science from 80 countries plus many scientific organizations that study climate science. More specifically, around 95% of climate researchers actively publishing climate papers endorse the consensus position". The consensus per cent is usually given as 97%, for example, by NASA⁶⁹. Perhaps this 'background information' (provided by reporter John Abraham at theguardian.com⁷⁰) to news headlines stating that "300 Scientists Tell Trump to Leave UN Climate Agreement" is most telling when it comes to the anthropogenic climate change 'controversy': "First of all, hardly anyone on the list was a climate scientist; many were not even natural scientists", and, secondly, the person

who appeared to orchestrate this letter, Richard Lindzen... may be best known for taking contrarian views on climate change that are not substantiated by the research, and being wrong on all of them. In fact, he has put forward multiple studies that were shown to be incorrect or questionable by his colleagues in the field.

In the documentary version⁷¹ of Oreskes and Conway's book, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, it is clear that facts stemming from the science done on global warming are often not of interest to

68 At [SkepticalScience.com](https://skepticalscience.com/global-warming-scientific-consensus-intermediate.htm) (<https://skepticalscience.com/global-warming-scientific-consensus-intermediate.htm> accessed 7 March 2017), reference is made to seven climate change consensus studies: " Authors of seven climate consensus studies — including Naomi Oreskes, Peter Doran, William Anderegg, Bart Verheggen, Ed Maibach, J. Stuart Carlton, and John Cook — co-authored a paper that should settle the expert climate consensus question once and for all. The two key conclusions from the paper are: 1) Depending on exactly how you measure the expert consensus, it's somewhere between 90% and 100% that agree humans are responsible for climate change, with most of our studies finding 97% consensus among publishing climate scientists. 2) The greater the climate expertise among those surveyed, the higher the consensus on human-caused global warming". This is just one of an endless number of sites pointing out the nearly unanimous consensus: others include www.climate.nasa.gov and www.un.org. The IPCC – Intergovernmental Panel on Climate Change – also provides extensive data on the reality of the link between human activity and climate change (see <https://www.ipcc.ch/report/ar5/index.shtml> accessed 7 March 2017).

69 <https://climate.nasa.gov/scientific-consensus/> accessed 7 March 2017

70 <https://www.theguardian.com/environment/climate-consensus-97-per-cent/2017/feb/27/just-who-are-these-300-scientists-telling-trump-to-burn-the-climate> accessed 7 March 2017

71 <https://www.youtube.com/watch?v=pRenGy0cg5s> accessed 7 March 2017

climate change deniers. In the documentary, Tim Phillips, president of ‘Americans For Prosperity’ (constituted, that is, by Americans who flatly deny the reality of anthropogenic climate change), is asked, “Do you try to figure out if the science is real or not?”. He replies immediately, “No. We’re on the economic side of things”. Oreskes and Conway show throughout the book of *Merchants of Doubt* that “a small group of men with scientific bona fides and deep political connections deliberately distorted public debate, running effective campaigns to mislead the public and deny well-established scientific knowledge over four decades” and that “many skeptical claims are based on ignoring evidence” (2010:241).

1.4 Deforestation

Deforestation is the removal of indigenous forests by people who use the cleared land for purposes other than indigenous forest growth⁷². Indigenous forests are intricate ecosystems – in every forest, a myriad of life forms participate to maintain a balance necessary for the survival of the forest ecosystems as a whole. Individual forests, however, are microcosms that together form the air-purification mechanism of the macrocosm that is earth⁷³; hence forests often being referred to as the lungs of the earth. Forests have for aeons played a crucial role in regulating the climate of the planet because they extract carbon from the atmosphere.

According to the WWF⁷⁴, the largest forest on Earth, the Amazon, “contains 90-140 billion metric tons of carbon, the release of even a portion of which would accelerate global warming significantly”. The reality is that human beings are deforesting a massive amount of the Amazon (and indeed the world's forests at large), i.e. they are releasing a portion of the carbon and thereby accelerating global warming; as stated on the website, the Amazon has diminished by 17% during the past half-century. More information is available: “Currently, land conversion and deforestation in the Amazon release up to 0.5 billion metric tons of carbon per year, not including emissions from forest fires so the Amazon is a significant factor in regulating global climate”. Considering the alarming information offered above about carbon emissions, greenhouse gases and climate change, the Amazonian deforestation statistics are truly alarming; add the loss of biodiversity that accompanies deforestation to this ecological equation and the situation is even worse.

The Amazonian deforestation information above, however, is occurring alongside the depletion of the entire planet's forests. According to earth-policy.org⁷⁵, the annual net loss of forests between 2000 and 2010 was 5.2 million hectares. As further pointed out on this website,

Global rates of deforestation do not capture the full damage done to the world’s forests. Forest degradation from selective logging, road construction, climate change, and other means compromises the health of remaining forests. Each year the world has less forested area, and the forests that remain are of lower quality. For example, replacing natural old-growth forests with a monoculture of an exotic species greatly reduces biodiversity.

72 https://www.ipcc.ch/ipccreports/sres/land_use/index.php?idp=49 accessed 16 May 2014

73 http://wwf.panda.org/about_our_earth/about_forests/importance/forestsairclimate/ accessed 16 May 2014

74 wwf.panda.org, already footnoted.

75 http://www.earth-policy.org/indicators/C56/forests_2012 accessed 16 May 2014

Such information draws attention to the fact that deforestation is not a phenomenon that can easily be 'undone' or 'corrected'. As clear from the above quote, the removal of natural forests is accompanied by the loss of the biodiversity of the natural forest. In a sense, the removal of the natural forest is tantamount to wiping away in one foul swoop several thousand, hundred thousand, or millions of years of the evolution of a network of interdependent life forms that cannot simply reappear 'from the grave', so to speak, if human beings simply were to regrow trees to replace some of what they chopped down. Earth is a synthesis of such networks; as human beings remove the individual organic components of the Earth system, so the overall planetary system weakens exponentially.

Diamond (2005:487) points out the following, where he draws attention to the anthropocentric reasons for the loss of natural habitats, and where he also expands the list of lost habitats from forests to include wetlands, coral reefs, and the ocean bottom, all of which are (or were) wildlife 'hotspots':

At an accelerating rate, we are destroying natural habitats or else converting them to human-made habitats, such as cities and villages, farmlands and pastures, roads, and golf courses. The natural habitats whose losses have provoked the most discussion are forests, wetlands, coral reefs, and the ocean bottom. ... [M]ore than half of the world's original area of forest has already been converted to other uses, and at present conversion rates one-quarter of the forests that remain will become converted within the next half-century.

1.5 Loss of topsoil

A thin layer of organic matter produced over thousands of years by the natural life-cycles, topsoil is "comprised of countless species that create a dynamic and complex ecosystem"⁷⁶. It is home "to billions of beneficial microorganisms per handful, in addition to nutrients, fungi and worms that are critical to healthy plant life"⁷⁷. Topsoil is "among the most precious resources to humans"⁷⁸. In the informative documentary named 'Dirt' (2009), which takes its name from the common and often pejorative use of the mostly American word that denotes soil in general, topsoil is indeed shown to be the 'precious resource'; as stated in the synopsis of the documentary⁷⁹, 'dirt' has "given us food, shelter, fuel, medicine, ceramics, flowers, cosmetics and color [sic] - everything needed for our survival".

As forests are cut because of human activity⁸⁰, the soil that was previously covered by the trees is left unprotected. The topsoil is then exposed to all sorts of weathering (direct sunlight, extremes of hot and/or cold, water flows, etc.) which gradually kills the myriad of life present in the once-healthy healthy topsoil – the soil literally withers and dies shortly after its protecting canopy of trees is removed, and the resulting lifeless substance is easily eroded under different weather conditions. In

76 <http://worldwildlife.org/threats/soil-erosion-and-degradation> accessed 19 May 2014

77 http://www.naturalnews.com/023451_soil_topsoil_life.html accessed 19 May 2014

78 <http://worldwildlife.org/threats/soil-erosion-and-degradation> accessed 19 May 2014

79 <http://www.imdb.com/title/tt1243971/plotsummary> accessed 19 May 2014

80 "Increased demand for agriculture commodities generates incentives to convert forests and grasslands to farm fields and pastures". From <http://worldwildlife.org/threats/soil-erosion-and-degradation> accessed 19 May 2014; "Forests are cleared all around the world for a number of reasons, including: Harvesting of timber to produce wood and paper products; Clearing land for farms, cash-crop plantations, and cattle ranching; Clearing land for urban development, including homes and roads." From http://www.ecokids.ca/pub/eco_info/topics/forests/threats.cfm accessed 19 May 2014

wet climates, top-soils simply erode as water washes freely over tree-felled landscapes. As David Montgomery, a geologist at the University of Washington and the author of the book *Dirt* (2007), points out, the "estimate is that we are now losing about 1 per cent of our topsoil every year to erosion"⁸¹. Montgomery adds that it is mostly due to human agriculture that such a worrying rate of topsoil-loss is occurring. Diamond (2005:489) provides some statistics: "Soils of farmlands used for growing crops are being carried away by water and wind erosion at rates between 10 and 40 times the rates of soil formation, and between 500 and 10,000 times soil erosion rates on forested land. Because those soil erosion rates are so much higher than soil formation rates, that means a net loss of soil".

The World Wildlife Foundation corroborates the concerning rate of topsoil loss: it states that "half of the topsoil on the planet has been lost in the last 150 years"⁸². The WWF draws attention to accompanying impacts of topsoil loss; for example, once forests are cleared and topsoils eroded into a water supply, it can eventually clog the supply and thereby adversely affect fish and other species. Land lacking a healthy layer of topsoil is also prone to flooding, which increases the level at which erosion occurs. The WWF is unambiguous when it comes to the causes of the topsoil-loss phenomenon: "transition to agriculture from natural vegetation often cannot hold onto the soil and many of these plants, such as coffee, cotton, palm oil, soybean and wheat, can actually increase soil erosion beyond the soil's ability to maintain itself"⁸³.

The result of topsoil loss is, of course, highly problematic considering the above information alone, but there is one last point that needs to be added here: the global loss of topsoil is the loss of the fragile layer of 'substance' in which the bulk of food is grown for most species of animals. Restated, we are losing that which is required to grow the food needed for survival. According to University of Sydney professor John Crawford⁸⁴, "we have just about 60 years of good soil left at current erosion rates due to farming methods that strip the soil of nutrients, which could lead to a serious food crisis in the mid-21st century".

The above statement, however, could mislead readers – there is *already* a food crisis, one in which topsoil loss has played a central role, and Haiti is an example of this. A 2013 report says the following⁸⁵: "An estimated 1.5 million Haitians face hunger because of poor harvests and rising food prices, ... says the U.N. World Food Programme". There is a long history behind Haiti's food crisis; the following from National Geographic⁸⁶ is offered to summarise Haiti's situation in particular, and to put information about topsoil loss (and deforestation) into more perspective:

Virtually since 1492, when Columbus first set foot on the heavily forested island of Hispaniola, the mountainous nation has shed both topsoil and blood – first to the Spanish, who planted sugar, then to the French, who cut down the forests to make room for lucrative coffee, indigo, and tobacco. Even after Haitian slaves revolted in 1804 and threw off the yoke of colonialism, France collected 93 million francs in restitution from its former colony – much of it in timber. Soon after independence, upper-class speculators and planters pushed the peasant classes out of the few fertile valleys and into the steep, forested rural areas, where their shrinking,

81 http://www.naturalnews.com/023451_soil_topsoil_life.html# accessed 19 May 2014

82 <http://worldwildlife.org/threats/soil-erosion-and-degradation> accessed 19 May 2014

83 Same source as above footnote

84 <http://inhabitat.com/soil-erosion-could-cause-food-crisis-expert-warns/> accessed 14 May 2014

85 <http://www.trust.org/item/20130618050112-zpqnd> accessed 19 May 2014

86 <http://ngm.nationalgeographic.com/2008/09/soil/bourne-text> accessed 19 May 2014

intensively cultivated plots of maize, beans, and cassava have combined with a growing fuelwood-charcoal industry to exacerbate deforestation and soil loss. Today less than 4 percent of Haiti's forests remain, and in many places the soil has eroded right down to the bedrock. From 1991 to 2002, food production per capita actually fell 30 percent.

1.6 Fresh Water

Water is a key ingredient for the survival of life, yet according to the Living Planet Report (2012:9), "2.7 billion people around the world already live in catchments that experience severe water shortages for at least one month a year". At the time of typing, 2.7 billion people is 37 per cent of the world's population of humans⁸⁷ – more than a third of all human beings therefore experience this water-related threat to their survival. Of these 2.7 billion people who live in water-scarce areas for parts of the year, 1.1 billion have severe difficulty finding clean water *at all* – this is roughly one fifth of all human beings; furthermore, lack of sanitation for 2.4 billion people means that they are exposed to the threat of water-borne illnesses such as cholera and typhoid diseases⁸⁸.

As stated on the UN's website dedicated to the issue of water scarcity⁸⁹, "water scarcity is both a natural and a human-made phenomenon". The human actions associated with loss of topsoil (sub-section 1.4), deforestation (sub-section 1.3), and greenhouse gas emission (sub-section 1.2), are obvious contributors to water-related issues of the ecological crisis. Kovel (2006: 1) draws attention to more information highlighting human beings as key players in the precarious global water situation when he points out that half "of the [world's] wetlands had been filled or drained [by 2002]" – the WWF, commenting several years later than Kovel, states that more than half of wetlands have "disappeared"⁹⁰. The Living Planet Report Summary (2012:16) adds, of "the approximately 177 rivers greater than 1,000km in length, only around a third remain free flowing and without dams on their main channel".

Interestingly (and alarmingly), according to the UN⁹¹, water "use has been growing at more than twice the rate of population increase in the last century". The World Water Council⁹² reiterates the alarming rate of water use, and adds some important, if somewhat understated, information regarding the continuing trend: "While the world's population tripled in the 20th century, the use of renewable water resources has grown six-fold. Within the next fifty years [i.e. from approx. 2010 to 2060], the world population will increase by another 40 to 50 %. This population growth - coupled with industrialization and urbanization – will result in an increasing demand for water and will have serious consequences on the environment".

According to a 2013 article in the "The Guardian" newspaper⁹³ entitled 'Global majority faces water shortages within two generations', "UN secretary general, Ban Ki-moon, added his voice to concerns about water security: "We live in an increasingly water insecure world where demand often

87 According to the website listed hereafter (accessed 24.06.2014), the world population of humans is currently 7.2 billion; as a statistic, 2.7 billion is 37.5 % of 7.2 billion - <http://www.worldometers.info/world-population/>

88 <https://www.worldwildlife.org/threats/water-scarcity> accessed 25 June 2014

89 <http://www.un.org/waterforlifedecade/scarcity.shtml> accessed 25 June 2014

90 <https://www.worldwildlife.org/threats/water-scarcity> accessed 25 June 2014

91 <http://www.un.org/waterforlifedecade/scarcity.shtml> accessed 25 June 2014

92 <http://www.worldwatercouncil.org/library/archives/water-crisis/> accessed 25 June 2014

93 <http://www.theguardian.com/environment/2013/may/24/global-majority-water-shortages-two-generations> accessed 25 June 2014

outstrips supply and where water quality often fails to meet minimum standards. Under current trends, future demands for water will not be met".” Despite the fact that Ki-moon's statement is misleading in that it may falsely suggest that water demands in the present *are* being met, which I have already shown in this sub-section not to be the case, his warning contains a dire implication of potential widespread death for various members of the human population – if demands for water are not met, and if water is essential for survival, then people will die without the water essential for survival. This is already happening: according to water.org⁹⁴, lack “of access to clean water and sanitation kills children at a rate equivalent of a jumbo jet crashing every four hours”. It should not be forgotten that human beings are only among the ‘big animals’ affected – countless other species are affected by the water issues I have raised so far.

Diamond (2005:490) provides the following information:

Most of the world's freshwater in rivers and lakes is already being utilized for irrigation, domestic and industrial water, and in situ uses such as boat transportation corridors, fisheries, and recreation. Rivers and lakes that are not already utilized are mostly far from major population centers and likely users, such as in Northwestern Australia, Siberia, and Iceland. Throughout the world, freshwater underground aquifers are being depleted at rates faster than they are being naturally replenished, so that they will eventually dwindle.

1.7 Landfill waste, associated pollution, toxic and chemical waste

A landfill site is typically an area designated for the 'controlled' dumping of materials thrown away by human beings; such an area must be distinguished somewhat from the less formal rubbish dumps (which add to the numbers below an estimated 98,995,672 tons of 'illegally' dumped waste globally⁹⁵) where measures of control of the 'trash' is lacking. A massive amount of mixed, unrecycled materials is sent daily to landfills across the world, resulting in increasingly massive heaps of discarded consumer material. According to a 2012 World Bank report entitled 'What a waste: a global review of solid waste management'⁹⁶, an estimated 3 billion urban residents currently produce on average “1.2 kg per person per day (1.3 billion tonnes per year). By 2025 this will likely increase to 4.3 billion urban residents generating about 1.42 kg/capita/day of municipal solid waste (2.2 billion tonnes per year)”. Added to landfill wastes are the wastes created by industry – as Diamond (2005:491) points out, the

chemical industry and many other industries manufacture or release into the air, soil, oceans, lakes, and rivers many toxic chemicals, some of them "unnatural" and synthesized only by humans, others present naturally in tiny concentrations (e.g., mercury) or else synthesized by living things but synthesized and released by humans in quantities much larger than natural ones (e.g., hormones).

As Laszlo (2006:27) says, “The wastes discarded into the environment do not vanish; they come back to plague those who produce them as well as other communities near and far”. In the case of 'trash', if one takes the average annual landfill-waste produced by 300 million people and piles it to a

94 <http://water.org/water-crisis/one-billion-affected/> accessed 25 June 2014

95 <http://www.waterhealtheducator.com/upload/Illegal%20Waste%20Dumping%20Article.pdf> accessed 29 June 2014

96 http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1334852610766/What_a_Waste2012_Final.pdf accessed 24 January June 2017

whopping height of 40 stories, the area covered would be 160,000 acres⁹⁷ of completely unusable land. The area around such sites also stand a very high risk of groundwater contamination: Waterencyclopedia⁹⁸ puts it better: “The creation of leachate, sometimes deemed ‘garbage soup,’ presents a major threat to the current and future quality of groundwater”. Unsurprisingly, the people who live near any one of the millions of landfill sites across the world stand an increased risk of getting different diseases, cancer being a prominent one, as highlighted in at least one study⁹⁹, due to “naturally occurring landfill gas... escaping into the surrounding air”. Furthermore, landfill gas comes partly in the form of methane, a highly volatile greenhouse gas; as the notorious Environmental Protection Agency comments¹⁰⁰, in the United States alone, “landfills are the third-largest source of human-related methane emissions in the [country], accounting for approximately 18.2 percent of these emissions in 2012”.

While on the topic of trash, it is worth drawing attention, as Greenpeace¹⁰¹ (for one) has, to the 'island' of floating plastic the size of Turkey in the North Atlantic ocean. The 'island' is constituted by discarded 'throw-away' materials, almost entirely plastic, that drift along currents to a central point (a 'gyre') and join with other floating debris. As Greenpeace says, “Some of the larger items are consumed by seabirds and other animals, which mistake them for prey. Many seabirds and their chicks have been found dead, their stomachs filled with bottle tops, lighters and balloons”. The plastics also leech chemicals into the ocean, as they do in landfills, gradually increasing toxicity levels. The North Atlantic gyre is one of five prominent ocean gyres slowly increasing in size and toxicity.

'Garbage' sent to landfill may be one source of environmental pollutants, but there are many more. This has already been seen in section 1.2 on greenhouse gas emissions – 36 billion metric tons of CO₂ released globally as pollutants every year¹⁰². Another well-known example is that of fertilizers and pesticides that find their way into rivers and ultimately the oceans; in the USA, for example, the “Mississippi River carries an estimated 1.5 million metric tons of nitrogen pollution into the Gulf of Mexico each year, creating a ‘dead zone’ in the Gulf each summer about the size of New Jersey”¹⁰³. It is therefore unsurprising that, as Kovel (2006:2) points out, “One-half of US coastal waters were [as of the year 2000] unfit for fishing or swimming”. Almost every country in the world now uses such large scale agricultural techniques that require chemical fertilisers and pesticides.

Laszlo (2006:27) summarises the general waste and pollution situation when he writes that human beings “inject an estimated 100,000 chemical compounds into the land, rivers and seas; dump millions of tons of sludge and solid waste into the oceans; release billions of tons of CO₂ into the air; and increase the level of radioactivity in water, land and air”. The final issue raised by Laszlo – radioactivity – needs some elaboration, especially in the light of the following information from Greenpeace¹⁰⁴: nuclear reactors “create radioactive waste that will remain hazardous for 240,000 years”, and that “radioactive waste produced by nuclear power plants accounts for 95% of the

97 <http://science.howstuffworks.com/environmental/green-science/one-giant-landfill.htm> accessed 27 June 2014

98 <http://www.waterencyclopedia.com/La-Mi/Landfills-Impact-on-Groundwater.html> accessed 27 June 2014

99 <https://www.greenleft.org.au/node/16621> accessed 27 June 2014

100 <http://www.epa.gov/methane/lmop/basic-info/index.html> accessed 27 June

101 <http://www.greenpeace.org/international/en/campaigns/oceans/fit-for-the-future/pollution/trash-vortex/> accessed 27 June 2014

102 <http://co2now.org/Current-CO2/CO2-Now/global-carbon-emissions.html> accessed 27 June 2014

103 <https://www.dosomething.org/facts/11-facts-about-pollution> accessed 27 June 2014

104 <http://www.greenpeace.org/usa/en/campaigns/nuclear/safety-and-security/radioactive-waste/> accessed 29 June 2014

radioactivity generated in the last 50 years from all sources". Moments' exposure to such high-level nuclear waste can result in a fatal dose of radioactivity for human beings and animals¹⁰⁵, but as Greenpeace wryly points out, the nuclear industry has not been able to keep track of all of its nuclear waste! The Guardian corroborates – “Radioactive materials have gone missing from businesses, hospitals and even schools more than 30 times over the last decade”¹⁰⁶; the source adds that at least four nuclear waste disposal sites in one county in the USA, radiation has been leaked into the environment. As recently as February 2014, a New Mexico nuclear waste disposal ('storage' is a better word) site – “America's only nuclear waste repository”¹⁰⁷ – was closed because of a massive radioactivity leak – at the time of writing, investigations into the unknown nature of the leak continue¹⁰⁸.

It must be pointed out that there is a lot of nuclear waste around – Greenpeace¹⁰⁹ puts it well when they say that, in the United Kingdom alone, there is “enough radioactive waste to fill the Royal Albert Hall five times over”; they add that there is no safe way to deal with nuclear waste, that the current method is to bury it (which is hardly 'dealing' with it), that there is no way to guarantee leaks from the stored life-threatening substances (the reported leak of 2014 above is a case in point), and that leaks contaminate water sources and food chains. There are currently 434 nuclear reactors worldwide¹¹⁰; over the past four decades, the industry has produced 71,780 metric tons of nuclear waste¹¹¹; all of this waste will still be actively radioactive in tens of thousands of years' time. One source¹¹² aptly asks the question, “Where do you put 250,000 tonnes of nuclear waste?”, seeing as, according to the source, this is the estimated amount “currently in interim storage, submerged in huge tanks of water in facilities that keep it safe – temporarily”. Considering such information, alongside the disaster and continuing aftermath of the Fukushima nuclear power plant, it can hardly seem surprising that Germany made the decision to shut down its nuclear power plants by 2022¹¹³.

Finally, the alarming rate of release of toxic chemicals into the environment worldwide needs to be mentioned. According to the 'worldometer'¹¹⁴ for the release of chemicals by industries, among whose sources are Eurostat, the EPA, and the UN Environment Program, 310 kg are released globally for *every second* that passes, amounting to approximately 10 million tons annually. Note that this is not just 'pollution', but *toxic* chemical pollution, the kind that, to quote from the worldometer site, “can cause severe illness, poisoning, birth defects, disease, or death when ingested, inhaled, or absorbed by living organisms”; unsurprising, seeing as of the ten million annual tons of toxic chemicals released globally, “over 2 million tons (over 4.5 billion pounds) per year are recognized carcinogens. This amounts to about 65 kg each second”.

105 <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/radwaste.html> accessed 29 June 2014

106 <http://www.theguardian.com/environment/2013/may/05/radioactive-materials-lost-30-incidents> accessed 29 June 2014

107 <http://www.bbc.com/news/world-us-canada-26441154> accessed 29 June 2014

108 <http://rt.com/usa/new-mexico-nuclear-waste-radiation-484/> and <http://www.rawstory.com/rs/2014/06/28/u-s-scientists-unable-to-replicate-radiation-leak-at-new-mexico-nuclear-waste-facility/> both accessed 29 June 2014

109 <http://www.greenpeace.org.uk/nuclear/problems> accessed 29 June 2014

110 <http://www.world-nuclear.org/info/Facts-and-Figures/World-Nuclear-Power-Reactors-and-Uranium-Requirements/> accessed 29 June 2014

111 <http://www.nei.org/Knowledge-Center/Nuclear-Statistics/On-Site-Storage-of-Nuclear-Waste> accessed 29 June 2014

112 <http://www.wired.co.uk/news/archive/2010-09/20/into-eternity-nuclear-waste-finland> accessed 29 June 2014

113 <http://www.dw.de/nuclear-exit-how-much-will-the-turnaround-cost/av-17734583> accessed 29 June 2014

114 <http://www.worldometers.info/view/toxchem/> accessed 29 June 2014

1.8 Genetically Modified Organisms (GMOs)

'Genetically modified organisms', or 'GMOs', have 'hit the world by storm' over the past 15 years – according to gmoinside.org¹¹⁵, 1999 marks the year that over “100 million acres worldwide [were] planted with genetically engineered seeds”; Chassy (2007:170) notes that between 1997 and 2007, over a billion acres were planted with “transgenic crops bred using modern biotechnology”. Such crops are ones where at least one gene from a different organism's DNA has been inserted into the DNA of the crop¹¹⁶ for various purposes, for examples, to make the crop more resistant to a given bacteria or infestation from certain insect. The new organism is then deemed the intellectual property of the corporation¹¹⁷ that funds the DNA splicing, and the corporation typically patents the GMO, alongside the necessary chemical products that the corporations develop for application to their patented GMOs. An example of one such chemical product is Monsanto's 'Roundup', which was developed alongside their GM corn, canola, cotton, soybeans, squash, and papaya – farmers therefore commit themselves to using Roundup, which is designed specifically to kill weeds in crop fields, when growing Monsanto's GM seed – the GM crop has been genetically engineered to resist the poison. Notably¹¹⁸, “Monsanto is... the largest producer of genetically engineered seeds on the planet, accounting for over 90% of the GE [i.e. genetically engineered] seeds planted globally in 2003”. A record 17.3 million farmers grew GM crops in 2012, up from 16.7 million farmers in 2011.

GMO supporters frequently state that there is no Scientific evidence that supports scepticism towards the use of the GMOs – British Environment Secretary Owen Paterson, as an extreme case in point, argues instead that there was compelling evidence “that GM crops could benefit farmers, consumers, the environment and the economy”¹¹⁹. Such a view is diabolically misleading, as the following from the European Network of Scientists for Social and Environmental Responsibility (ENSSER)¹²⁰ makes clear:

As scientists, physicians, academics, and experts from disciplines relevant to the scientific, legal, social and safety assessment aspects of genetically modified organisms (GMOs), we strongly reject claims by GM seed developers and some scientists, commentators, and journalists that there is a “scientific consensus” on GMO safety and that the debate on this topic is “over”.

In case it seems that the controversy surrounding GMOs is simply to do with differing views about the consensus of GMO safety, consider that various studies have been conducted that explore links between the chemicals associated with GMOs and defects in human and animal health – the Children of Vietnamese Veterans Health Alliance¹²¹, for example, lists dozens of scientific studies that link the use of Glyphosate, the active ingredient in Monsanto's Roundup, with various conditions, such as 'acute poisoning', non-Hodgkin lymphoma and Hairy Cell leukemia, rhinitis, myeloma, altered testosterone levels and testicular morphology, cytogenetic damage and induction of pro-oxidant state, genotoxicity, glyphosate-induced parkinsonism... the list goes on. In a paper¹²²

115 <http://gmoinside.org/gmo-timeline-a-history-genetically-modified-foods/> accessed 30 June 2014

116 http://agbiosafety.unl.edu/basic_genetics.shtml accessed 30 June 2014

117 <http://gmo-awareness.com/all-about-gmos/gmo-defined/> accessed 30 June 2014

118 <http://web.mit.edu/demoscience/Monsanto/players.html> accessed 30 June 2014

119 <http://www.globalresearch.ca/the-realities-of-gmo-and-petro-chemical-agriculture-allergies-toxins-new-diseases/5367760> accessed 30 June 2014

120 <http://www.ensser.org/increasing-public-information/no-scientific-consensus-on-gmo-safety/> accessed 30 June 2014

121 <https://www.scribd.com/document/248335546/Genetic-Modification-Research-Studies> accessed 22 March 2017 (Please note that the site does not always follow through to the correct link for the relevant article; the names of the listed articles can, however, be copy-pasted into the Google search engine and located in this manner.)

122 'Aluminum and Glyphosate Can Synergistically Induce Pineal Gland Pathology: Connection to Gut Dysbiosis and Neurological Disease'. Accessed 6 June 2017 at

published in 2015, MIT's Stephanie Seneff further problematizes glyphosate when she traces the synergistic effects of glyphosate and aluminium:

Many neurological diseases, including autism, depression, dementia, anxiety disorder and Parkinson's disease, are associated with abnormal sleep patterns, which are directly linked to pineal gland dysfunction. The pineal gland is highly susceptible to environmental toxicants. Two pervasive substances in modern industrialized nations are aluminum and glyphosate, the active ingredient in the herbicide, Roundup®. In this paper, we show how these two toxicants work synergistically to induce neurological damage.

Of course, these incidences put glyphosate and other chemical applications under the spotlight and not GMOs exclusively, but as has been suggested above, *Monsanto's Glyphosate (as well as the pesticides, herbicides and fertilisers associated with various other corporations' GM crops) and GM food crops go hand-in-hand* – “Worldwide, around 650,000 tonnes of glyphosate products were used in 2011, and sales were worth around US\$6.5 billion in 2010, more than the value of all other herbicides combined. And its use keeps increasing...”¹²³ In reviewing the general situation regarding the use of GMOs specifically, and not the associated chemicals, ENSSER, quoted earlier, shows without question that the proverbial jury is still out when it comes to the safety of GMO foods; another example – the claim that there is scientific consensus regarding the safety of GMOs “is misleading and misrepresents the currently available scientific evidence and the broad diversity of opinion among scientists on this issue”¹²⁴.

ENSSER also points out that, contrary to 'pro-GMO' views, there are studies that show the use of 'Bt' crops to adversely affect “non-target” and “beneficial organisms” – this has nothing to do with Roundup or Glyphosate, and everything to do with GMOs exclusively. Bt stands for *Bacillus thuringiensis*, “a bacteria that naturally produces a crystal protein that is toxic to many pest insects”¹²⁵ – the relevant gene from the bacteria is inserted into the DNA of a relevant crop so that every cell of the plant is resistant to pests. Various sources¹²⁶ report, however, that pests have *adapted to Bt crops*, and have become Bt resistant in the period of about a decade. This indeed puts all Bt crops at risk of immanent failure, which is a global food security threat, raises questions about the foresight of GMO corporations and proponents, puts into doubt any claim that GMOs are a safe ‘bet’ for solving global food problems, and even elevates the current widespread use of GM crops to a prominent position on the list of factors that threaten global food security.

With regard to general ecological issues and the use of GMOs, ENSSER has the following to say:

As with GM food safety, no scientific consensus exists regarding the environmental risks of GM crops. A review of environmental risk assessment approaches for GM crops identified shortcomings in the procedures used and found “no consensus” globally on the methodologies that should be applied, let alone on standardized testing procedures.

https://www.researchgate.net/publication/271724900_Aluminum_and_Glyphosate_Can_Synergistically_Induce_Pineal_Gland_Pathology_Connection_to_Gut_Dysbiosis_and_Neurological_Disease

¹²³ http://www.foeurope.org/sites/default/files/press_releases/foee_1_introducing_glyphosate.pdf accessed 30 June 2014

¹²⁴ <http://www.ensser.org/increasing-public-information/no-scientific-consensus-on-gmo-safety/> accessed 30 June 2014

¹²⁵ http://www.sourcewatch.org/index.php/Bt_Crops accessed 30 June 2014

¹²⁶ http://www.academia.edu/3624694/Pest_resistance_management_in_Bt_cotton_Gossypium_hirsutum accessed 30 June 2014; <http://uanews.org/story/trouble-horizon-gm-crops>; accessed 30 June 2014; <http://www.sciencedaily.com/releases/2012/06/120620133359.htm>; accessed 30 June 2014

The Executive Summary of the International Assessment of Agricultural Knowledge, Science and Technology (IAASTD) synthesis report of 2009¹²⁷, sponsored by the World Bank, corroborates ENSSER's statement above:

[A]ssessment of modern biotechnology is lagging behind development; information can be anecdotal and contradictory, and uncertainty on benefits and harms is unavoidable. There is a wide range of perspectives on the environmental, human health and economic risks and benefits of modern biotechnology, many of which are as yet unknown.

Despite the unknown risks, GMOs, as shown at the outset of this sub-section, are grown en masse in many countries around the world. Wherever these GMOs are grown, the following environmental concerns are relevant, as explained at responsibletechnology.org¹²⁸:

GM crops and their associated herbicides can harm birds, insects, amphibians, marine ecosystems, and soil organisms. They reduce bio-diversity, pollute water resources, and are unsustainable. For example, GM crops are eliminating habitat for monarch butterflies, whose populations are down 50% in the US. Roundup herbicide has been shown to cause birth defects in amphibians, embryonic deaths and endocrine disruptions, and organ damage in animals even at very low doses. GM canola has been found growing wild in North Dakota and California, threatening to pass on its herbicide tolerant genes on to weeds.

The same source points out that

GMOs cross pollinate and their seeds can travel. It is impossible to fully clean up our contaminated gene pool. Self-propagating GMO pollution will outlast the effects of global warming and nuclear waste. The potential impact is huge, threatening the health of future generations. GMO contamination has also caused economic losses for organic and non-GMO farmers who often struggle to keep their crops pure.

One commentator, distinguished professor of risk engineering at New York University Nassim Nicholas Taleb, makes the bold claim¹²⁹ that GMOs could cause “an irreversible termination of life at some scale, which could be the planet”. The same source quotes Taleb with a lengthy but crucial thought-provoking description of the situation regarding GMOs:

Top-down modifications to the system (through GMOs) are categorically and statistically different from bottom up ones (regular farming, progressive tinkering with crops, etc.) There is no comparison between the tinkering of selective breeding and the top-down engineering of arbitrarily taking a gene from an organism and putting it into another. Saying that such a product is natural misses the statistical process by which things become “natural”. [i.e. evolving over thousands of years in a natural ecosystem, or at least breeding over several generations.]

What people miss is that the modification of crops impacts everyone and exports the error from the local to the global. I do not wish to pay — or have my descendants pay — for errors by executives of Monsanto. We should exert the precautionary principle there — our non-naive version — simply because we would only discover errors after considerable and irreversible environmental damage.

It is therefore hardly surprising that in "more than 60 countries around the world, including Australia, Japan and all of the countries in the European Union, there are significant restrictions or

127 <http://www.greenfacts.org/en/agriculture-iaastd/l-2/3-biotechnology-for-development.htm> accessed 30 June 2014

128 <http://www.responsibletechnology.org/10-Reasons-to-Avoid-GMOs> accessed 30 June 2014

129 <http://www.globalresearch.ca/gmos-could-destroy-the-global-ecosystem-risk-expert/5375349> accessed 30 June 2014

outright bans on the production and sale of GMOs".¹³⁰ This, however, does not mean that the threat is diminishing – GM crops are still being grown en masse in various countries, GMO proponents continue to misconstrue information about the scientific status of GMOs, and the above threats to human beings and the wider ecology of the planet hit home even harder considering the information about ecological degradation that has already been explored, more of which is to be examined below.

1.9 Overpopulation and resource depletion

Paul Ehrlich, Bing Professor of Population Studies in the department of Biological Sciences at Stanford University, along with his wife Anne, point out in *The Population Explosion* (1990:37–40), that the “key to understanding overpopulation is not population density but the numbers of people in an area relative to its resources and the capacity of the environment to sustain human activities”. This was true in 1990, and remains true in any given historical context. An area may be densely populated by people, but it might not be overpopulated if resources are used in such a way as to allow for the indefinite continuation of the density of people living there.

Using the above definition of overpopulation, the Ehrlichs state unambiguously that “the entire planet and virtually every nation is already vastly overpopulated” – note that the statement was made in 1990, when the human population was at 5,278 billion¹³¹, versus 7.244 billion in mid-2014¹³². They draw attention to issues that have already been detailed above – for example, the deforestation that is occurring globally, widespread fresh water scarcity, loss of topsoil, the destruction of biodiversity, and the release of carbon dioxide into the atmosphere.

The impact of the seven billion people and their over-use of resources on the ecology of the planet is addressed in the Living Planet Report Summary of 2012¹³³; it states that, in 2008, humanity’s “Ecological Footprint exceeded the Earth’s biocapacity by more than 50 per cent in 2008”. This means, quite simply, that the amount of resources used by human beings in 2008, and the impact (e.g. release of carbon dioxide) that this use of resources had on the ecology of the planet, took 1.5 years for the planet to regenerate and absorb. The full Living Planet Report of 2012¹³⁴ (pg. 40) draws attention to the obvious question, how can this be possible when there is only one Earth? The report offers the following explanation:

Just as it is possible to withdraw money from a bank account faster than to wait for the interest this money generates, renewable resources can be harvested faster than they can be re-grown. But just like overdrawing from a bank account, eventually the resource will be depleted. At present, people are often able to shift their sourcing when this happens; however at current consumption rates, these sources will eventually run out of resources too – and some ecosystems will collapse even before the resource is completely gone.

Note that the world’s *current* population of human beings is using renewable resources at a much faster rate than the ‘resources’ can be regrown. As Diamond (2005:494) points out, the “world’s

130 <http://www.livescience.com/40895-gmo-facts.html> accessed 30 June 2014

131 <http://www.infoplease.com/ipa/A0762181.html> accessed 2 July 2014

132 <http://www.worldometers.info/world-population/> accessed 2 July 2014

133 http://awsassets.panda.org/downloads/lpr_2012_summary_booklet_final.pdf accessed 2 July 2012

134 http://awsassets.panda.org/downloads/1_lpr_2012_online_full_size_single_pages_final_120516.pdf accessed 2 July 2014

human population is growing. More people require more food, space, water, energy, and other resources”.

Clearly, the above concise information regarding overpopulation and resource over-use constitute yet another aspect of the ecological crisis – not only are human beings threatened by their own actions, but so is the environment (fauna and flora) from which resources are extracted; this issue of the impact on the ecology of the planet has been addressed collectively in the above sub-sections.

1.10 Conclusion to Chapter 1

In this chapter I have collated information that together substantiates the claim that there is an ecological crisis. There is no single phenomenon that constitutes the ecological crisis, and this is important to remember lest one get distracted by the claims made by ‘climate change deniers’ who would have one believe that there is no consensus about the truth that human beings are altering global climate with their polluting industries and fossil-fuel ‘hungry’ systems . I have shown that the following ecological issues stand out as particularly pertinent ones, all of which together culminate in the depiction of an alarming state of planetary ecology: loss of biodiversity, greenhouse gas emissions, carbon emissions and climate change; deforestation; loss of topsoil; water issues; landfill waste, associated pollution, toxic and chemical waste; genetically modified organisms, and overpopulation. This is not to suggest that the listed areas of focus are the *only ones* that together constitute the ecological crisis, but they did come to the forefront during research for this chapter.

I will take the liberty of closing this chapter with a lengthy quote from Jared Diamond’s book *Collapse*, from which I have already quoted in this chapter. I do so because Diamond also focuses on several of what he calls ‘the most serious problems’ in the context of a ‘collapsing’ society. I find his following comment (2005:497-498) to be, first of all, confirmation of many of my focal areas in this chapter, and second, a foreshadowing of some of the problematic industries (that directly cause, indeed *require*, ecological destruction) I will focus on in the following chapter:

I have described [various] problems as separate from each other. In fact, they are linked: one problem exacerbates another or makes its solution more difficult. For example, human population growth affects all [the] other problems: more people means more deforestation, more toxic chemicals, more demand for wild fish, etc. The energy problem is linked to other problems because use of fossil-fuels for energy contributes heavily to greenhouse gases, the combating of soil fertility losses by using synthetic fertilizers requires energy to make the fertilizers, fossil-fuel scarcity increases our interest in nuclear energy which poses potentially the biggest ‘toxic’ problem of all in case of an accident, and fossil-fuel scarcity also makes it more expensive to solve our freshwater problems by using energy to desalinate ocean water. Depletion of fisheries and other wild food sources puts more pressure on livestock, crops, and aquaculture to replace them, thereby leading to more topsoil losses and more eutrophication from agriculture and aquaculture. Problems of deforestation, water shortage, and soil degradation in the Third World foster wars there and drive legal asylum seekers and illegal emigrants to the First World from the Third World.

Chapter 2

What are the direct physical causes of the ecological crisis?

2.1 Introduction to Chapter 2

This chapter is a continuation of the approach taken in Chapter 1; in the first chapter I evidenced the claim that there is an ecological crisis, while in Chapter 2 I aim to identify several of the main industries that 'fuel' the aspects of the ecological crisis identified in Chapter 1. As in Chapter 1, the approach in Chapter 2 is descriptive in the sense that I collate specific information and themes from a wide range of sources; there will therefore again be little 'higher-order' academic activity in this chapter, for example, synthesis of information and ideas – such activity has been reserved for later chapters. As with Chapter 1, Chapter 2 serves as a factual platform of information and themes to which I will refer in other sections and chapters of the study.

2.2 The fossil-fuel industry

To state that contemporary society uses a lot of oil, coal and gas, would be something of a ridiculous understatement: in a 2009 article at phys.org¹³⁵, University of Aberdeen's John Jones is attributed with saying that at least 135 billion barrels of oil have been used since 1870; worldcoal.org¹³⁶ puts the figure of coal used in 2012 alone at 7831 million tons; and needtoknow.nas.edu¹³⁷ lists the global natural gas use for 2006 at 104 trillion cubic feet. These are astronomical quantities of fuels, the extraction and use of which, as will be seen below, is diabolically damaging to the environment.

In the extraction of the listed fossil-fuels from the earth, concerted mechanised and chemical efforts by a variety of industrialists have “devastating results to the landscape”¹³⁸. In Science magazine's October 2013 issue, nine Australian researchers are listed as authors to an article entitled 'Biodiversity risks from fossil-fuel extraction'. The article lists some of the effects of the extraction of fossil-fuels:

Direct effects include local habitat destruction and fragmentation, visual and noise disturbance, and pollution. Indirect effects can extend many kilometers from the extraction source and include human expansion into previously wild areas, introduction of invasive species and pathogens, soil erosion, water pollution, and illegal hunting. Combined, these factors lead to population declines and changes in community composition.

In the article the researchers continue to describe other devastating post-drilling ecological factors, specifically when it comes to the transportation of oil and gas. Most often these other factors are “deforestation, water contamination, and soil erosion”. Obviously, the phenomena occur when roads are built, and fossil-fuel corporations increasingly drill in ecologically-sensitive areas – recently,

135 <http://phys.org/news160906147.html> accessed 3 July 2014

136 <http://www.worldcoal.org/resources/coal-statistics/> accessed 3 July 2014

137 <http://needtoknow.nas.edu/energy/energy-sources/fossil-fuels/natural-gas/> accessed 3 July 2014

138 <http://www.thinkglobalgreen.org/coal.html> accessed 3 July 2014

for example, the Yusani Rainforest in Eastern Ecuador¹³⁹. There is no uncertainty about what happens to a naturally biodiverse area when such drilling gets underway: Peru's Amazon rainforest, for example, as reported by livescience.com¹⁴⁰, "is extensively contaminated from decades of oil and gas drilling, researchers reported [on 12 June 2014]... at the annual Goldschmidt geochemistry conference".

In the case of drilling for oil and gas offshore, authors of the most recently cited Science magazine article point out that oil spills "in marine environments can have severe environmental impacts over wide areas". Consider first that, according to the Environmental Protection Agency¹⁴¹, "14,000 oil spills are reported each year"! Second, some of these oil spills are beyond 'severe', as in the case of the BP Deepwater Horizon Oil Spill of 2010, the US's biggest on record. According to dosomething.org¹⁴², "more than 200 million gallons of crude oil was pumped into the Gulf of Mexico for a total of 87 days"; "16000 total miles of coastline have been affected"; a "method of treating the oil spill [was] "in-situ burning" or burning oil in a contained area on the surface of the water, which has [further] negative effects on the environment"; over "8000 animals (birds, turtles, mammals) were reported dead just 6 months after the spill, including many that were already on the endangered species list". Clearly, the BP oil spill alone caused an ongoing environmental disaster; collectively, as already evident from the information in this sub-section, the acquisition of this fossil-fuel from the environment is an ecological catastrophe.

When it comes to coal, as explained in the Clean Air Task Force's (CATF) 'Cradle to Grave: The Environmental Impacts from Coal'¹⁴³, from "mining to coal cleaning, from transportation to electricity generation to disposal, coal releases numerous toxic pollutants into our air, our waters and onto our lands". In the 'Cradle to Grave' document, the CATF provides extensive information on the ecologically-destructive methods of coal mining – they point out, for example, that one method of attaining coal known as surface or strip mining, where the layers of earth covering coal deposits are completely 'stripped' away, has left "hundreds of thousands of acres" of land deeply scarred. A different source, the 'Strip Mining Handbook'¹⁴⁴, corroborates the CATF's concerns: strip mines "severely erode the soil or reduce its fertility; pollute waters or drain underground water reserves; scar or alter the landscape; damage roads, homes, and other structures; and destroy wildlife. The dust and particles from mining roads, stockpiles, and lands disturbed by mining are a significant source of air pollution".

The drilling for natural gas – hydraulic fracturing – also known as 'fracking', is "a water-intensive process where millions of gallons of fluid — a mix of water, sand, and chemicals, including ones known to cause cancer — are injected underground at high pressure to fracture the rock surrounding an oil or gas well. This releases extra oil and gas from the rock, so it can flow into the well¹⁴⁵". Fracking, as explained by popularmechanics.com¹⁴⁶, involves (for as start) the known release of large quantities of methane; methane is a greenhouse gas that, pound for pound, has a

139 <http://news.nationalgeographic.com/news/2013/08/130819-ecuador-yusani-rain-forest-oil-drilling-environment-science/> accessed 3 July 2014

140 <http://www.livescience.com/46319-oil-drilling-contaminated-amazon.html> accessed 3 July 2014

141 <http://www.epa.gov/osweroe1/content/learning/response.htm> accessed 3 July 2014

142 <https://www.dosomething.org/facts/11-facts-about-bp-oil-spill> accessed 3 July 2014

143 http://www.catf.us/resources/publications/files/Cradle_to_Grave.pdf accessed 3 July 2014

144 <https://sites.google.com/site/stripmininghandbook/chapter-2-1> accessed 3 July 2014

145 <http://www.foodandwaterwatch.org/water/fracking/> accessed 4 July 2014

146 <http://www.popularmechanics.com/science/energy/coal-oil-gas/top-10-myths-about-natural-gas-drilling-6386593#slide-3> accessed 3 July 2014

“comparative impact... on climate change... over 20 times greater than CO₂ over a 100-year period”¹⁴⁷. Often, the methane leaks uncontrollably, as indicated in a study of July 2014 by the Proceedings of the National Academy of Sciences¹⁴⁸; it is even reported to be the case that natural gas wells “are leaking up to 1,000 times more methane than the Environmental Protection Agency estimates, a dirty secret that could potentially wipe out all climate benefits touted by natural gas proponents”¹⁴⁹.

Fracking, as explained by the above popularmechanics.com source, requires massive amounts of energy: “Drilling is an energy-intensive business. It relies on diesel engines and generators running around the clock to power rigs, and heavy trucks making hundreds of trips to drill sites before a well is completed”. Of course, similar phenomena as those involved with oil and coal acquisition occur when a site is 'fracked'¹⁵⁰: roads must be built, areas are often deforested, wildlife is accordingly displaced, and pollution is unavoidable. One of the more concerning pollutants from fracking is known as 'fracking liquid' or 'fracking fluid', a concoction of chemicals released into the ground in order for drilling to work. The cited popularmechanics.com¹⁵¹ article states that fracking liquid consists of

known and suspected carcinogens, including benzene and methanol. Even if these chemicals can be found under kitchen sinks, as industry points out, they're poured down wells in much greater volumes: about 5000 gallons of additives for every 1 million gallons of water and sand. A more pressing question is what to do with this fluid once it rises back to the surface.

It is also pointed out in the article that in a short period of 2 years, “a series of surface spills, including two blowouts at wells”¹⁵² at a site in the USA, released 8000 gallons of fracking fluid and contaminated groundwater in the region. This is not an isolated occurrence – according to Cornell University engineer Anthony Ingraffea, who has studied the non-linear science of rock fractures for three decades, “[f]luid migration from faulty wells is a well-known chronic problem with an expected rate of occurrence”¹⁵³.

The fuels in question – oil, coal, and gas – are the main ones combusted globally (but not exclusively) in massive quantities to power contemporary society's power stations, cars, trucks, trains, aeroplanes, ocean tankers, construction vehicles, heating and cooling systems, etc.; these are indeed a few of the plethora of 'products' of the fossil-fuel industry that simultaneously have been built by the industry and rely on the industry for their continued use. The manufacturing of even one car, truck, aeroplane, etc. obviously requires the extraction and processing of large amounts of raw materials. Commenting on the difference between 1970 and 2000, Kovel (2002:3) points out that the “global motor vehicle population had almost tripled, from 246 million to 730 million”, and that air traffic “had increased by a factor of six”. By 2013, the number of cars had increased to over a billion¹⁵⁴ (*excluding* off-road and construction vehicles), and air traffic, since 2000, has continued to

147 <http://epa.gov/climatechange/ghgemissions/gases/ch4.html> accessed 4 July 2014

148 <http://abcnews.go.com/Technology/wireStory/fracking-study-finds-newer-gas-wells-leak-24372024> accessed 6 July 2014

149 <http://thinkprogress.org/climate/2014/04/25/3430900/baker-frack-disclosure/> accessed 6 July 2014

150 <http://www.foodandwaterwatch.org/factsheet/ban-fracking-now/> accessed 4 July 2014

151 <http://www.popularmechanics.com/science/energy/coal-oil-gas/top-10-myths-about-natural-gas-drilling-6386593#slide-10> accessed 3 July 2014

152 <http://www.popularmechanics.com/science/energy/coal-oil-gas/top-10-myths-about-natural-gas-drilling-6386593#slide-4> accessed 3 July 2014

153 <http://www.resilience.org/stories/2013-01-10/shale-gas-how-often-do-fracked-wells-leak> accessed 6 July 2014

154 <http://www.plunkettresearch.com/automobiles-trucks-market-research/industry-trends> accessed 4 July 2014

grow at 5% per year¹⁵⁵. Cars and air traffic are just two examples of subsidiaries of the fossil-fuel industry that continue to grow; this is alongside the obvious accompanying global increase¹⁵⁶ of fossil-fuel usage.

The associated annual *increase*¹⁵⁷ of the release of carbon dioxide by the products of the fossil-fuel industry is one obvious outcome of the extensive continued usage of these fuels and the accompanying technologies touched upon above. Such greenhouse gas emission is explored in sub-section 1.3 above – as shown in that sub-section, the anthropogenic release of CO₂ has accelerated global warming and climate change to high-alert status, seeing as the effects of the pollution are only beginning to be seen and will continue to synergise towards ecological 'melt-down' for centuries into the future¹⁵⁸. A second outcome is the ecological destruction that accompanies, for example, the development of roads for cars and industry – deforestation, loss of topsoil, and water contamination, which have been alluded to in this sub-section and discussed in previous sub-sections, result from the continued and accelerating expansion of systems as per the approach of fossil-fuel technology. Third, the pollution of the environment beyond the obvious CO₂ emissions, for example, the thousands of oil spills that occur annually, as already mentioned above, is another conspicuous part and parcel of the industry.

To conclude this sub-section, a telling April 2014 article from the Harvard Magazine¹⁵⁹ will be quoted; its relevance is obvious:

JUST THREE DAYS after President Drew Faust outlined Harvard's role and actions in combating climate change, nearly 100 faculty members called on the president and the Harvard Corporation to do more. The signers of an open letter calling for divestment include leading atmospheric scientists, distinguished professors from a wide range of academic departments, affiliates from nearly every school at Harvard, several department heads, and members of the scientific community. They emphasize the overwhelming evidence of fossil-fuel as a primary cause of climate change”...

“Our sense of urgency in signing this letter cannot be overstated,” the authors write.

“Humanity's reliance on burning fossil-fuels is leading to a marked warming of the Earth's surface, a melting of ice the world over, a rise in sea levels, acidification of the oceans, and an extreme, wildly fluctuating, and unstable global climate. These physical and chemical changes, some of which are expected to last hundreds, if not thousands, of years are already threatening the survival of countless species on all continents. And because of their effects on food production, water availability, air pollution, and the emergence and spread of human infectious diseases, they pose unparalleled risks to human health and life”.

2.3 The petrochemical industry

The petrochemical industry is a subsidiary of the fossil-fuel industry, specifically the oil and gas industries, as is clear from the definition offered by petrochemistry.eu¹⁶⁰: petrochemicals are

155 <http://www.iata.org/publications/economics/Documents/passenger-analysis-dec2013.pdf> accessed 4 July 2014

156 <http://www.scientificamerican.com/article/fossil-fuel-use-continues-to-rise/> accessed 6 July 2014

157 <http://www.dailymirror.lk/business/features/48574-global-warming-continues-to-be-a-serious-global-issue.html> accessed 6 July 2014

158 <http://harvardmagazine.com/2014/04/faculty-support-divestment> accessed 4 July 2014

159 <http://harvardmagazine.com/2014/04/faculty-support-divestment> accessed 4 July 2014

160 <http://www.petrochemistry.eu/about-petrochemistry/what-are-petrochemicals.html> accessed 14 July 2014

“[c]hemicals derived from petroleum [i.e. oil] or natural gas”. The same source points out that the petrochemical industry is a “major player in today's economy and society”, which is something of an understatement considering that in 2011 the global petrochemical industry was valued¹⁶¹ at 600 billion US dollars and in 2012 it was valued¹⁶² at 609.3 billion USD; according to chemweek.com¹⁶³, global “economic and chemical output growth should continue to accelerate in 2014”, and in the US *alone*, exports “of chemicals will grow 6.6% in 2014, to \$205 billion, and a further 7.6% in 2015. Excluding pharmaceuticals, the surplus in chemicals trade will grow to \$67.5 billion by 2018, up from \$42.7 billion in 2013, an average of 9.6%/year”.

The ubiquity of the products of the petrochemical industry is pointed out at The American Fuel and Petrochemicals (AFPM) website¹⁶⁴ when the following is stated:

Petrochemicals are used to manufacture thousands of products people use every day — just about everything not made from rocks, plants, other living things or metal. These products include everything made of plastic, medicines and medical devices, cosmetics, furniture, appliances, TVs and radios, computers, parts used in every mode of transportation, solar power panels and wind turbines. ... In fact, regardless of how you're viewing this website — on a desktop computer, laptop or smart phone — the viewing device is made from petrochemicals.

For a start, based on the above information from the AFPM, it is clear that the petrochemical industry manufactures, alongside many things, plastics, and plastics are the materials that predominantly constitute the floating islands of rubbish discussed in sub-section 1.7; most of the landfill waste discussed in the same section is also a product of the petrochemical industry – as stated at discovermagazine.com¹⁶⁵, “300 Million [was the] Projected global plastic production in 2010, in metric tons, according to a report^[166] published by the Royal Society (U.K.)... Fifty percent of all plastic is made for disposable applications such as packaging; about a quarter goes into long-term infrastructure items such as pipes. More than 40 million tons become textile fibers like nylon and polyester”.

With such a widespread distribution of such products as listed by the AFPM above, it is unsurprising that, as the International Energy Agency¹⁶⁷ points out, the “chemical and petrochemical sector is by far the largest industrial energy user, accounting for roughly 10% of total worldwide final energy demand and 7% of global GHG [green house gas] emissions”. These are significant percentages, and in light of the information above (sub-section 2.2) regarding the impact of the fossil-fuel industry that provides the energy for the petrochemical industry and severely degrades the ecology of the planet, as well as in light of the accompanying information above about greenhouse gases and climate change (sub-section 1.3), the petrochemical industry is by default of its energy-use alone deeply inculcated as a major culprit in the ecological crisis.

161 http://www.equate.com/news/templates/Equate_template.aspx?articleid=73&zoneid=1 accessed 14 July 2014

162 https://www.visiongain.com/Press_Release/222/Petrochemicals-market-to-be-worth-609-30bn-in-2012-says-visiongain-report accessed 14 July 2014

163 http://www.chemweek.com/lab/Outlook-2014-Looking-forward_57898.html accessed 14 July 2014

164 <http://www.afpm.org/petrochemicals/> accessed 14 July 2014

165 <http://discovermagazine.com/2009/oct/21-numbers-plastics-manufacturing-recycling-death-landfill> accessed 15 July 2014

166 <http://rstb.royalsocietypublishing.org/content/364/1526/2153.abstract> accessed 15 July 2014

167 <http://www.iea.org/publications/freepublications/publication/name,40309,en.html> accessed 15 July 2014

Some of the products of the petrochemical industry can and do cause serious environmental damage. Take, for example, the 1.5 million tons of fertilisers and pesticides that run into the Mississippi River, referenced in sub-section 1.7, along with the accompanying oceanic dead zone; these pesticides and fertilisers are among the products of the petrochemical industry, and as shown in sub-section 1.8, they are used en-mass for global food production. It is worth pointing out that, as detailed in sub-section 1.8, the highly toxic but widely used Roundup from Monsanto is one such product of the petrochemical industry.

At this point, reference to a scientific paper entitled “Unsafe Petrochemical Refinery Air Pollution and its Environmental Impact Assessment”¹⁶⁸, undertaken in India, will help shed some light on the realities of petrochemical refineries. Below are some noteworthy points taken directly from the abstract of the paper (note that there are several ‘expression mistakes’ in the original paper, which I do not correct below – these issues with form, however, must not detract from the content):

- High levels of carcinogens have been determined from petroleum and chemical refinery air emissions.
- Many of the carcinogenic chemicals discharged in to the atmosphere during the leakage periods were found particularly severe to children.
- Petrochemical air sampling measurement reports show that during the course of gas leak there were about thirty toxic chemicals get discharged into atmosphere. These are common refinery chemicals such as benzene and bromo methane, which have been identified and monitored by using high volume air samplers after the gas leakages.
- Chemicals such as hydrogen sulfide, carbon disulphide, bromo methane, Methyl Ethyl Ketene, Benzene, Toluene, h-Hexane, Methylbenzene, m, p-xylene and n-Nonane were found above safe limits. Benzene and hydrogen sulfide were 36 times and 33 times higher than safer levels prescribed by the pollution control standards of about 5000 µg/m³.
- Petrochemical air pollution effects severe health problems to the public who are exposed in the vicinity, particularly children. They suffer from chemical based chronic/acute diseases such as ulcer, allergic dermatitis, lung cancer, liver necrosis, brain damage, and premature death, liver and kidney problems.
- The clinical symptoms of acute toxicity are vomiting, diarrhea, blood loss into the gastrointestinal tract causing cardiovascular diseases.
- Toxic effects are produced by prolonged contact with airborne or solid or liquid petrochemical carcinogenic compounds even in small quantities.
- Prolonged exposure causes ulcers, skin irritation and allergic dermatitis. Exposure to chemical dust emissions may cause perforation of nasal septum, corrosion of bronchopulmonary tract and lung cancers. In the kidneys, it causes tubular necrosis and may also damage the liver.
- These carcinogenic substances produce adverse health effects on the workers and result occupational health [sic] hazards. Public get affected non-occupational health [sic] hazards especially, those people who are exposed in the vicinity.

One Indian petrochemical refinery under the spotlight might not be representative of all refineries, but it is impossible to deny the severity of petrochemical pollution, as shown in the study. A different source, however, does draw attention to the fact that the petrochemical industry is

168 https://www.google.co.za/url?sa=t&rc=j&q=&escr=s&source=web&cd=1&cad=rja&uact=8&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.wseas.us%2Flibrary%2Fconferences%2F2009%2Fflalaguna%2FEPREWA%2FEPREWA85.pdf&ei=qj3HU_jDHZKA7Qb104GIBg&usg=AFQjCNF0zOz2li_qNZigxr34VCdd6qYBmQ&sig2=2V47aqUuqafL257T4HjLPg&bvm=bv.71198958,d.ZGU accessed 17 July 2014

ubiquitously responsible for extensive pollution: according to worstpolluted.org¹⁶⁹, the Blacksmith Institute “has investigated polluted petrochemical sites in Africa, South America, Eastern Europe and South Asia” – the number of sites occupying the Blacksmith Institute's database is 75, with 2.2 million people potentially being exposed to the petrochemical pollution at and around these sites alone. The findings are that the areas surrounding the petrochemical sites investigated by the Blacksmith Institute

are largely polluted by untreated wastewater and sludge being disposed of in surface water sites. Untreated waste from petrochemical sites can contain very toxic pollutants... The majority of investigated sites are contaminated by lead, but a large array of chemicals is found. These include, cadmium, mercury, volatile organic compounds, PCBs and oil or petroleum products. Health impacts from these sites include neurological damage, lung irritation and disease and forms of cancer.

This information alone makes it impossible to dismiss the results of the 'Unsafe Petrochemical Refinery Air Pollution and Its Environmental Impact Assessment' study as a rare exception to the rule.

A long list of highly toxic chemicals is par for the petrochemical course, so to speak. [Discovermagazine.com](http://discovermagazine.com)¹⁷⁰ states that 93 per cent of “individuals 6 years and older” whose urine was tested “contained detectable bisphenol A (BPA), a chemical used in the manufacture of some plastics, in a CDC [Centre for Disease Control and Prevention] study published in 2007”. The source adds that four “million tons of BPA are produced each year. A National Toxicology Program report released last fall said there was ‘some concern’ that exposure to BPA could lead to developmental changes in infants and children”. [Americanlaboratory.com](http://americanlaboratory.com)¹⁷¹ avoids such ambiguity when it states that BPA “has been implicated in having an estrogenic effect on humans. It also plays a potential role in disturbing the normal balance of other hormones in humans (such as the thyroid hormone) and can have a multitude of health effects related to this. In recent years, BPA has gained increased attention since baby bottles made of plastic can result in the ingestion of BPA by infants, leading to accumulation in tissues that can affect normal development”.

Other products of the petrochemical industry to raise toxicity alarm bells are 1) phthalates, “used widely in polyvinyl chloride plastics, which are used to make products such as plastic packaging film and sheets, garden hoses, inflatable toys, blood-storage containers, medical tubing, and some children's toys”¹⁷². In a study entitled 'Environmental phthalate exposure in relation to reproductive outcomes and other health endpoints in humans'¹⁷³, the conclusion was that “[m]any of the findings reported in humans – most of which have been in males – are consistent with the anti-androgenic action that has been demonstrated for several phthalates”. 2) Toluene, which according to the Agency for Toxic Substances and Disease Registry¹⁷⁴ (ATSDR) is “used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes”, adversely affects the “[e]yes, skin, respiratory system, central nervous system, liver,

169 http://www.worstpolluted.org/projects_reports/display/106 accessed 17 July 2014

170 <http://discovermagazine.com/2009/oct/21-numbers-plastics-manufacturing-recycling-death-landfill> accessed 15 July 2015

171 <http://www.americanlaboratory.com/914-Application-Notes/37318-A-Look-Into-the-Petrochemicals-Industry/> accessed 15 July 2014

172 http://www.cdc.gov/biomonitoring/phthalates_factsheet.html accessed 15 July 2014

173 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2775531/> accessed 15 July 2014

174 <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=29> accessed 15 July 2014

kidneys”, according to the Centre for Disease Control and Prevention¹⁷⁵ (CDC). 3) Styrene, billions of pounds of which are, according to the ATSDR¹⁷⁶, “produced each year to make products such as rubber, plastic, insulation, fiberglass, pipes, automobile parts, food containers, and carpet backing”, is known to adversely affect the liver, the nervous system, and the eyes, and which the ATSDR classifies as “Reasonably Anticipated to be a Human Carcinogen”. 4) Thylene, which is “one of the top 30 chemicals produced in the United States in terms of volume. Thylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes”¹⁷⁷, according to the ATSDR affects the developmental system (effects during periods when organs are developing), the liver, the nervous system, and the kidneys. 5) Parabens, which are used as “preservatives in cosmetics, pharmaceuticals, foods, and beverages”¹⁷⁸, - in a 2012 study¹⁷⁹ by a team at the University of Reading, it was “found that virtually all – 99 percent – of the tissue samples collected from women participating in the study contained at least one paraben, and 60 percent of the samples contained no less than five parabens”. This process of listing a petrochemical, the numerous products in which it is used, and the associated known health issues, could go on at length, and the ATSDR website is recommended for further reading if necessary. This list so far, however, should corroborate the following concerns raised in an article at americanlaboratory.com¹⁸⁰:

Many of these chemicals are released into the ground, and air, and water and can have adverse effects on our environment and human life. Depending on their use, since petrochemicals can be absorbed through the skin or might be ingested, they can accumulate in human tissues and organs such as the brain and liver and can cause brain, nerve and liver damage, birth defects, cancer, asthma, hormonal disorders, and allergies. We are still in the early days of understanding the adverse effects of petrochemicals on our health and environment.

Considering that the sample of toxic petrochemicals listed above, as well as a plethora of other chemicals not commented on here, find their way into the environment due to the various products containing petrochemicals being disposed of into the environment at alarming rates, the following comment¹⁸¹ from Americanlaboratory.com¹⁸² is validated: “While the petrochemicals industry has provided us with many valuable products, petroleum-derived chemicals can also be hazardous and toxic to the health of living beings and the earth’s ecosystems”. Columbia University's Kate Orff offers a succinct summative comment on the petrochemical situation; she speaks explicitly about America, but the petrochemical industry and its impact on the planet is ubiquitous and therefore the comment is relevant on a global scale:

Americans know what the oil and gas and coal landscape looks like – but do we really? There is a hidden side to America's material prosperity. Most of its harmful manifestations are literally invisible – benzene and dioxins ‘disappear’ into the air, while waste chemicals are pumped underground into injection wells. PCBs, Mercury, and Lead, toxic in the most imperceptible but potentially devastating amounts, persist in our bodies, in river sediment, in soils.

175 <http://www.cdc.gov/niosh/npg/npgd0619.html> accessed 15 July 2014

176 <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=74> 15 July 2014

177 <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=53> accessed 15 July 2014

178 http://www.cdc.gov/biomonitoring/Parabens_FactSheet.html accessed 15 July 2014

179 <http://onlinelibrary.wiley.com/doi/10.1002/jat.1786/abstract;jsessionid=D715345619D8FCC958CF30A4C10424A3.d01t04> and

http://www.huffingtonpost.com/organic-authoritycom/breast-cancer-parabens-_b_1209041.html accessed 15 July 2014

180 <http://www.americanlaboratory.com/914-Application-Notes/37318-A-Look-Into-the-Petrochemicals-Industry/> accessed 15 July 2014

181 <http://discovermagazine.com/galleries/zen-photo/p/petrochemical> accessed 6 July 2014

182 <http://www.americanlaboratory.com/914-Application-Notes/37318-A-Look-Into-the-Petrochemicals-Industry/> accessed 15 July 2014

2.4 The agricultural industry

In an interview¹⁸³, Michael Pollan, an American author, journalist, activist, and professor of journalism at the UC Berkeley Graduate School of Journalism, remarks that “we have been eating oil for 30 or 40 years, ever since the products of war became the products of our pesticides”. Pollan's comment hints at various issues, the one most relevant to this chapter being the extent to which the oil industry dominates the agricultural industry – and as it has already been seen in various sub-sections above (most notably 2.2), the oil industry plays a central causal role in the ecological crisis.

An initial overview of the extent to which agriculture is a fossil-fuel dependent system can be found at royalsocietypublishing.org; there, a paper called 'Energy and the food system'¹⁸⁴ summarises some key points about the energy inputs of the agricultural industry. The four authors of the article, respectively from Imperial College London, the University of Cranfield, and the Food and Environment Research Agency, offer a concise abstract to the paper, parts of which follow:

Modern agriculture is heavily dependent on fossil resources. Both direct energy use for crop management and indirect energy use for fertilizers, pesticides and machinery production have contributed to the major increases in food production seen since the 1960s. ... Nitrogen fertilizer production uses large amounts of natural gas and some coal, and can account for more than 50 per cent of total energy use in commercial agriculture. Oil accounts for between 30 and 75 per cent of energy inputs of UK agriculture, depending on the cropping system. While agriculture remains dependent on fossil sources of energy, food prices will couple to fossil energy prices and food production will remain a significant contributor to anthropogenic greenhouse gas emissions.

The ecological issues with the fossil-fuel industry have, at this point of the chapter, been well established; the abstract just quoted, furthermore, mentions fertilisers and pesticides, the products of the petrochemical industry also already explored above for its destructive environmental consequences; the reference to greenhouse gases, a topic also discussed above for its ecological implications, is also raised. The 'Energy and the food system' paper, however, is the tip of an iceberg, so to speak, when it comes to the issues associated with an agricultural system extensively reliant on fossil-fuels; countercurrents.org¹⁸⁵ takes a step closer to expressing something of the intricate 'web' of fossil-fuel systems necessary for global food production:

The systems that produce the world's food supply are heavily dependent on fossil-fuels. Vast amounts of oil and gas are used as raw materials and energy in the manufacture of fertilisers and pesticides, and as cheap and readily available energy at all stages of food production: from planting, irrigation, feeding and harvesting, through to processing, distribution and packaging. In addition, fossil-fuels are essential in the construction and the repair of equipment and infrastructure needed to facilitate this industry, including farm machinery, processing facilities, storage, ships, trucks and roads. The industrial food supply system is one of the biggest consumers of fossil-fuels and one of the greatest producers of greenhouse gases.

The “industrial food supply system” mentioned above is one where monocropping techniques are used – as the name suggests, monocropping is the planting of one food crop, usually over very large areas of land. Such a technique has dire consequences for the biodiversity of an area: biodiversity, as defined and discussed in sub-section 1.2, denotes variety of life in an ecosystem, and it requires no

183 <https://www.youtube.com/watch?v=Ob7Vso86DxA> accessed 18 July 2014

184 <http://rstb.royalsocietypublishing.org/content/365/1554/2991.full> accessed 18 July 2014

185 <http://www.countercurrents.org/po-church0700405.htm> accessed 18 July 2014

explanation when making the obvious point that a monocrop is by definition not 'varied'. Take, for example, palm oil plantations; a researcher named Fitzherbert, according to rainforest-rescue.org.au¹⁸⁶, “found that conversion of primary rainforest to an oil palm plantation results in a loss of more than 80 percent of species”. So due to the mere existence of a monocrop, biodiversity of an area decreases – land is cleared and ploughed, and its energy focused entirely on producing one kind of crop for anthropocentric purposes; other species, big and small, fauna and flora, that once inhabited a monocropped area, are displaced.

Once an area is cleared and planted with a monocrop, it is routinely sprayed at different times with pesticides/herbicides and fertilizers; these petrochemical substances have already been discussed in numerous sub-sections above for their role in the ecological crisis. To elaborate further on such a role, now in the context on the agricultural industry, consider first the phenomenon of spraying insecticides: as explained at sustainable.org¹⁸⁷, growing “only one type of crop in a large area of land causes crop vulnerability to insects, weeds, fungi, and other pests – as the pest spreads, it can continue unabated. This vulnerability to pests often requires intensive use of insecticides, fungicides, and/or herbicides”. Insideclimateneews.org¹⁸⁸ touches on several issues arising when such poisons are used: results “of intensive pesticide use include loss of biodiversity and elimination of key species (e.g., bees); adverse health effects for both consumers and agricultural workers; water pollution and soil contamination; and pest resistance, resulting in the need for increased application of pesticides, or the need for alternate formulations”. The same source raises some serious concerns about the sustainability of fertilizers, which “accounts for 20 percent of U.S. farm energy use” (and worldwide, “the figure may be slightly higher”):

Ultimately, the use of commercial fertilizers is not sustainable over time, as many formulations of fertilizer require high inputs of fossil-fuel use, especially natural gas, for their creation, ensuring further dependence on fossil-fuels for industrial crop production. Other types of commercial fertilizers, such as phosphorus, are mined; the extraction of phosphorus from the ground is energy-intensive and polluting. In addition, phosphate reserves that are easily accessible are gradually declining.

The world's fresh water situation, already discussed in an above sub-section, is heavily affected by agriculture. According to the WWF¹⁸⁹, agriculture “consumes more water than any other source and wastes much of that through inefficiencies”. Sustainable.org¹⁹⁰ adds that the use “of intensive irrigation is common in industrial crop production” and that agriculture “accounts for 80% of the water used in the US. In much of the world, water for agricultural irrigation is taken from ground water that does not replenish itself”. Unsurprisingly, as water becomes an increasingly scarce substance, more energy is used in industrial endeavours to access it; as pointed out at insideclimateneews.org¹⁹¹, in “the United States, close to 19 percent of farm energy use is for pumping water. And in some states in India, where water tables are falling, over half of all electricity is used to pump water from wells”. Furthermore, the 'run-off' from fertilizers and pesticides into rivers and ultimately the ocean, which creates the 'dead zones' mentioned in earlier sub-sections, is a phenomenon relevant here that is directly a result of the agriculture industry, which of course is by

186 www.rainforestrescue.org.au/blog/2009/02/11/rapid-expansion-of-oil-palm-plantations/#sthash.Gk5cTLWc.dpuf accessed 18 July 2014

187 <http://www.sustainabletable.org/804/industrial-crop-production> accessed 18 July 2014

188 <http://insideclimateneews.org/news/20090716/agriculture-industrys-oil-addiction-threatens-food-security> accessed 18 July 2014

189 <https://www.worldwildlife.org/threats/water-scarcity> accessed 25 June 2014

190 <http://www.sustainabletable.org/804/industrial-crop-production> accessed 18 July 2014

191 <http://insideclimateneews.org/news/20090716/agriculture-industrys-oil-addiction-threatens-food-security> accessed 18 July 2014

now clearly a major subsidiary of the fossil-fuel industry; sustainable.org reiterates such a concern, and indeed calls it one “of the most serious environmental effects of commercial fertilizer use”: “[r]iver, stream, lake, and ocean health are all affected by inorganic fertilizer runoff from industrial farms. Excess amounts of nitrogen and phosphorus in bodies of water create algae blooms and dead zones (areas in the ocean where little or no life is found due to decreases in oxygen levels)”.

Adding to the list of ecological concerns with industrial agriculture techniques, various monocrops are genetically modified organisms – for details, see sub-section 1.8, where extensive information is offered in this regard. All the concerns raised in that sub-section are relevant when discussing the ecological consequences of industrial agriculture when genetically modified crops are involved.

Transportation and processing in the industrial agriculture industry also play major roles when it comes to environmental impacts. According to insideclimatenews.org¹⁹², the “14 percent of energy used in the food system to move goods from farmer to consumer is equal to two-thirds of the energy used to produce the food. And an estimated 16 percent of food system energy use is devoted to canning, freezing, and drying food – everything from frozen orange juice concentrate to canned peas”. There is a telling and interesting analysis by researchers at the Swedish Institute for Food and Biotechnology of various inputs required to make a bottle of tomato ketchup; as listed at countercurrents.org¹⁹³,

[t]he aseptic bags used to package the tomato paste were produced in the Netherlands and transported to Italy to be filled, placed in steel barrels, and then moved to Sweden. The five layered, red bottles were either produced in the UK or Sweden with materials from Japan, Italy, Belgium, the USA and Denmark. The polypropylene (PP) screw-cap of the bottle and plug, made from low density polyethylene (LDPE), was produced in Denmark and transported to Sweden. Additionally, LDPE shrink-film and corrugated cardboard were used to distribute the final product. Labels, glue and ink were not included in the analysis.

Every single step in the processing chain obviously requires the use of fossil-fuels, not just for transportation between 'phases', but for the production and running of the machinery used. The same source lists a different study that “has estimated that UK imports of food products and animal feed involved transportation by sea, air and road amounting to over 83 billion tonne-kilometres. This required 1.6 billion litres of fuel and, based on a conservative figure of 50 grams of carbon dioxide per tonne-kilometre resulted in 4.1 million tonnes of carbon dioxide emissions”. A final 'processing' factor that needs to be mentioned here is the packaging of food; it is stated at insideclimatenews.org¹⁹⁴ that packaging accounts for “7 percent of food system energy use” and that it “is not uncommon for the energy invested in packaging to exceed that in the food it contains”.

Organicconsumers.org¹⁹⁵ provides as a succinct summary of some central concerns raised about industrial agriculture:

Modern intensive agriculture is unsustainable. Technologically-enhanced agriculture has augmented soil erosion, polluted and overdrawn groundwater and surface water, and even (largely due to increased pesticide use) caused serious public health and environmental

192 <http://insideclimatenews.org/news/20090716/agriculture-industrys-oil-addiction-threatens-food-security> accessed 18 July 2014

193 <http://www.countercurrents.org/po-church0700405.htm> accessed 18 July 2014

194 <http://insideclimatenews.org/news/20090716/agriculture-industrys-oil-addiction-threatens-food-security> accessed 18 July 2014

195 <http://www.organicconsumers.org/corp/fossil-fuels.cfm> accessed 18 July 2012

problems. Soil erosion, overtaxed cropland and water resource overdraft in turn lead to even greater use of fossil-fuels and hydrocarbon products. More hydrocarbon-based fertilizers must be applied, along with more pesticides; irrigation water requires more energy to pump; and fossil-fuels are used to process polluted water.

Diamond (2005:489) adds loss of topsoil to the already-long list of ecologically-problematic consequences of industrial agriculture, and provides (2005:489-490) the following information:

Other types of soil damage caused by human agricultural practices include salinization...; losses of soil fertility, because farming removes nutrients much more rapidly than they are restored by weathering of the underlying rock; and soil acidification in some areas, or its converse, alkalization, in other areas. All of these types of harmful impacts have resulted in a fraction of the world's farmland variously estimated at between 20% and 80% having become severely damaged, during an era in which increasing human population has caused us to need more farmland rather than less farmland.

2.5 The Construction Industry

This sub-section focuses on information that shows the construction industry to be one that not only uses immense amounts of energy and resources to construct buildings, but also one that produces buildings that themselves are dependent on the on-going use of large amounts of energy. The energy source for construction is almost unanimously fossil-fuel, and the resources are almost exclusively cement and concrete, wood, metals, plastics and various insulating materials such as synthetic foam largely from industrial sources; accompanying such energy- and resource-use are the release of greenhouse gases, the loss of biodiversity, the pollution of environments, deforestation, the creation of large amounts of landfill waste, and loss of topsoil, (to name a just few ecologically-problematic phenomena), all discussed in Chapter 1.

The United Nations Environmental Programme's Sustainable Buildings and Climate Initiative stated¹⁹⁶ in 2009 that buildings “are responsible for more than 40 percent of global energy use and one third of global greenhouse gas emissions, both in developed and developing countries”. The Environmental Protection Agency listed¹⁹⁷ a similar percentage for energy-use by the building sector in the US: buildings “accounted for 38.9 percent of total U.S. energy consumption in 2005”. This figure is again corroborated by Domone and Illston (2010:536) in *Construction materials: their nature and behaviour*; the authors say that over “their entire lifespan, structures are responsible for

40% of the world's energy
40% of the world's solid waste generation
40% of the world's greenhouse gas emissions
33% of resource use
12% of water use”.

These numbers by the UNEP, the EPA, and Domone and Illston substantiate the affirmation that the construction and building industry uses vast amounts of energy and resources; and as has been shown already in earlier sub-sections, total global energy- and resource-use has had and continues

¹⁹⁶ <http://www.unep.org/sbci/pdfs/sbci-bccsummary.pdf>

¹⁹⁷ www.epa.gov/greenbuilding/pubs/gbstats.pdf accessed 11 August 2014

to have a devastating impact on the ecology of the planet. The construction industry is therefore responsible for significant ecological degradation due to its heavy use of energy and resources alone. The Wilmott Dixon construction group, one of the United Kingdom's biggest private construction groups¹⁹⁸ (operational since 1852), takes heed of such information and points out the following¹⁹⁹:

Around half of all non-renewable resources mankind consumes are used in construction, making it one of the least sustainable industries in the world. [...] Contemporary human civilisation depends on buildings and what they contain for its continued existence, and yet our planet cannot support the current level of resource consumption associated with them.

Danny Harvey (2010:115) corroborates the alarmingly high levels of energy-use in buildings in *Energy and the new reality: energy efficiency and the demand for energy services* when he writes that “energy use in buildings accounts for 53 per cent of total electricity use and 38 per cent of total primary energy in OECD countries”; he adds information that is quite specific when he points out that energy “is used in buildings for heating, cooling and ventilation, for producing hot water, for lighting, and as electricity to power appliances and/or consumer goods and/or office equipment”. Harvey provides further details with the following: “In the US, the European Union, and in China, “space and hot water heating together account for two thirds to four fifths of total residential energy use”. The same nations have commercial sectors where space “heating accounts for a third to half of total commercial energy use... Lighting accounts for 15 to 30 per cent of total on site energy use and 30 to 60 per cent of electricity use”. One consequence, as The IPCC²⁰⁰ points out, is that

residential and commercial buildings accounted for 19% and 10%, respectively, of global carbon dioxide (CO₂) emissions from the use of fossil-fuels in 1990. More recent estimates increase this percentage to 21% for residential buildings and 10.5% for commercial buildings, both for 1990 and 1995 [...] Globally, space heating is the dominant energy end-use in both residential and commercial buildings. Developed countries account for the vast majority of buildings-related CO₂ emissions, but the bulk of growth in these emissions over the past two decades was seen in developing countries.

In having so far established that the construction and building industry uses massive amounts of energy and resources, and is directly responsible for the burning of the bulk of fuels used by humankind, it must be pointed out that the industry is inculcated in the kinds of issues that constitute the ecological crisis, as explored in Chapter 1. This is because of the various different kinds of impact that the fossil-fuel industry has on the environment, as discussed in the relevant sub-section above; the impact it has due to its use of fresh water, also discussed in a relevant sub-section above; the destruction of forests for timber and the accompanying loss of topsoil, again already discussed; and the same when it comes to the loss of biodiversity, which occurs alongside the listed ecological issues. Information provided by Wilmott Dixon touches upon such wider issues of ecological impact; the following is about the construction and building industry in the UK, but the issues are relevant globally:

198 <http://www.wilmottdixongroup.co.uk/about-us> accessed 1 August 2014

199 <https://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCMQFjAB&url=http%3A%2F%2Fwww.wilmottdixongroup.co.uk%2Fassets%2Fb%2Fbriefing-note-33-impacts-of-construction-2.pdf&ei=P33aU5ejl8vB7AaOv4HoBg&usg=AFQjCNFnRGvr1Jlq192G7IYC-LCehk9g&bvm=bv.72185853,d.ZGU> accessed 31 July 2014

200 <http://www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=93> accessed 29 July 2014

The mass of resources used in the UK construction industry is dominated by stone and primary aggregates: sand and gravel extraction of these primary resources implies major environmental impact from loss of habitat and ecosystem, damage to the landscape, potential subsidence problems and release of methane.

On the topic of landfill waste, Wilmott Dixon states²⁰¹ that the construction and building industry is responsible for approximately 50% of global landfill waste, another reason to highlight the construction and building industry as highly problematic in the context of the ecological crisis due to the extensive issues associated with landfill waste. Landfill waste was, in the relevant sub-section above, listed alongside the ecological issue of pollution; Wilmott Dixon has the following to add about pollution: in the context of the construction and building industry, pollution

can be defined in many ways: that arising from the built environment (sewage, waste etc.); pollution caused during the manufacture of materials and products; pollution and hazards from the handling and use of materials or from the site itself; and other construction and operationally-related activities. The design and construction phases involve the specification of materials, and the use of plant, processes and techniques. Most also involve extensive disturbances to the existing environment, whether on green field or previously developed sites.

The 'existing environment' disturbed by all aspects of the construction and building industry is further affected by the release of 'other' harmful chemicals: As UNEP says, "the Buildings and Construction Sector is also responsible for significant non-CO2 GHG emissions such as halocarbons, CFCs, and HCFCs (covered under the Montreal Protocol), and hydrofluorocarbons (HFCs), due to their applications for cooling, refrigeration, and in the case of halocarbons, insulation materials"²⁰².

Another problematic material widely used in the construction and building industry is cement. Domone and Illston (2010:542-543) point out that the "quantity of cement used worldwide has risen markedly in the last few years, a trend that looks set to continue for the foreseeable future": from just over 1.5 billion tons in 1996 to approximately 2.6 billion tons in 2007. Cement is high up on the list of the world's most environmentally unfriendly materials, mainly due to the large amount of energy required to produce it. The authors (2010:536) provide some of the details:

The production of Portland cement ... requires high temperatures firstly to decompose the calcium carbonate to calcium oxide and calcium dioxide ... and then to fuse the calcium oxide with silicates, aluminates and ferrites to form the cement compounds. Carbon dioxide emissions therefore occur as a result of the burning of the fuels to produce the high temperatures, the breakdown of the calcium carbonate and the production of the energy required for raw material extraction, clinker grinding and transport of the finished cement.

This information about cement draws attention to the intricate web of fossil-fuel processes required for one material used widely in the construction and building industry, but the vast majority of materials used in construction have large carbon footprints associated with them. In a research paper called 'Carbon footprint for building products'²⁰³, Antti Ruuska lists building materials and their carbon footprints; what is of interest here is not the specific carbon footprint of each material, as the alarming percentage of total global greenhouse gas from the building sector has already been

201 Same document already referenced for Wilmott Dixon

202 <http://www.unep.org/sbci/pdfs/sbci-bccsummary.pdf>

203 <https://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.vtt.fi%2Finf%2Fpdf%2Ftechnology%2F2013%2FT115.pdf&ei=z3fbU52wAqSQ7Aa4roDoCw&usg=AFQjCNGwxZAooDsFvIrMqkROA27pcV5cck&bvm=bv.72197243,d.ZG>

U accessed 1 August 2014

established. What is of interest is that Ruuska lists 50 materials, each of which is, like cement, a product that requires numerous industrial processes to create and transport to a building site; among these are: Fibreboard (porous), Chipboard (Raw), Chipboard (Melamine faced), Gypsum plasterboard, High Density Fibreboard, Medium Density Fibreboard (Raw), Medium Density Fibreboard (Melamine Faced), Oriented Strand Board (Raw), Plywood (Standard Birch), Plywood (Standard Conifer), Laminate Flooring, Massive Parquet, Multi-layer Parquet, Shipping Dry Timber, Dried Timber (Coniferous), Dried Timber (Deciduous), Special Dry Timber, Glued laminated timber, Planed Timber, Glass Wool, Polystyrene (EPS), Polyurethane (Rigid Foam), Wood fibre insulation, Aerated Concrete Block, Reinforced Aerated Concrete Block, Aluminium extrusion profile, Aluminium sheet, Ceramic Tile, Stainless Steel, Copper Sheet, Copper tube, Copper wire, Crushed stone, Float Glass, Gravel, Gypsum plaster, Gypsum stone, Lightweight Concrete Block, Polyethylene (LDPE), and Pre-cast Concrete. Note that the list is not an extensive one; hundreds more materials are used in the construction and building industry in the construction phase of a building, in the maintenance of the building during its lifetime, and in renovations.

To return briefly to the topic of cement: one further concern has been found during the course of this research about cement in 'The cement industry as a scavenger in industrial ecology and the management of hazardous substances' by Lucas Reijnders²⁰⁴. Here follows part of the abstract for the paper, which draws attention to the potential toxicity of a fairly ubiquitous substance:

The cement industry uses a variety of secondary materials and fuels, thus fulfilling the role of 'scavenger' in industrial ecology (IE). The use of wastes in cement production has been advocated to reduce cement production costs and to achieve the degradation and immobilization of hazardous compounds. In dealing with hazardous elements contained in the wastes, this development has side effects such as relatively significant stack emissions of heavy metals and leaching of hazardous compounds during the life cycle of cement-derived products.

Overall, the construction and building industry has been shown to be another ecologically-destructive subsidiary of the fossil-fuel industry; more specific information is available about other environmental issues due to construction and buildings, but enough has been covered in this subsection for the purposes of understanding the role of this industry in the context of the ecological crisis. In the acquisition of the fuels required to run machinery for construction and to keep buildings cooled and heated etc., the environment is damaged (forests cleared for roads and sites, biodiversity decreased, fresh water sources jeopardised, topsoil lost, etc.). In the burning of the fuels in such a massive industry, greenhouse gases are released en masse. In the creation of materials and the acquisition of resources for building, forests are cleared further and biodiversity, topsoil and fresh water are affected. In the production of an array of different kinds of materials, landfill waste and pollution (much of which is the product of the petrochemical industry, yet another subsidiary of the fossil-fuel industry), the environment is heavily degraded.

2.6 The mining industry

The mining industry, another large subsidiary of the fossil-fuel industry, must be considered alongside the latter industry, one already examined for its extensive adverse ecological impacts. Strip mining for coal, drilling for oil, and fracking for natural gas, for examples, have been discussed

204 <http://onlinelibrary.wiley.com/doi/10.1162/jiec.2007.997/abstract> accessed 29 July 2014

above for their direct impact on ecology, as well as the impacts that the various 'accompaniments' to these kinds of mining projects have on ecosystems such as the building of roads, the production of waste materials, and the clearing of forests for access to resources (and the domino effects such activities have further down the line, such as the loss of biodiversity and topsoil). All mining activities, furthermore, are massive consumers of fossil-fuel energy, and therefore are responsible for the emission of considerable amounts of carbon into the atmosphere. Additionally, the infrastructure for the building and running of mines is extensive, and inputs from a wide industrial web can be traced, all of which come at the expense of the environment; a plethora of petrochemicals is also used, some of which have already been shown to have considerable adverse effects on people and the environment, and heavy pollution is strongly associated with the industry in the context of the fossil-fuel industry already explored.

According to the Energy Information Administration (EIA) in the USA²⁰⁵, the “second-largest user of energy in the world industrial sector is the iron and steel industry, which accounted for 15 percent of industrial sector delivered energy consumption in 2010”; note that the EIA says of the industrial sector in general that it “uses more delivered energy than any other end-use sector, consuming about one-half of the world's total delivered energy”. A different source²⁰⁶ adds some more information about energy use in the mining industry:

South Africa’s Department of Minerals and Energy (DME) estimates that the mining industry uses 6% of all the energy consumed in South Africa. In Brazil, the largest single energy consumer is mining giant Vale, which accounts for around 4% of all energy used in the country. In the US State of Colorado, mining has been estimated to account for 18% of total industrial sector energy use, while overall in the US it is calculated that the mining industry uses 3% of industry energy.

EIA.org²⁰⁷ adds that “Chile, added to the OECD in 2010, is the world's largest producer of copper, and the mining industry accounts for 16 percent of total fuel consumption in the country's industrial sector”. These percentages of total industrial energy-use alone already paint the mining industry in a problematic light due to the impact that fossil-fuel technologies have on the environment (issues explored already in Chapter 1, and notably in sub-section 2.2, ‘the fossil-fuel industry’), for examples, the associated carbon emissions and their contributions to climate change, deforestation and road-building and pollution that comes with accessing an area for its fossil-fuels, loss of topsoil, and loss of biodiversity.

Other than the basic fact that mining uses greenhouse-gas producing fossil-fuel energy, mining processes generally pollute the environment considerably. As pointed out at a Canadian government website, Environment Canada²⁰⁸, in the context of the mining industry in general, “Waste rock and mine tailings can result in releases to water and soil. Acidic drainage and the leaching of metals from the mine workings and mine wastes may occur at metal mines. Acidic drainage can cause significant impacts on water quality and aquatic ecosystems. Chemicals that are used to process metal-bearing ores can also be found in mine waste water”. Water and soil are categories in themselves in the first

205 <http://www.eia.gov/forecasts/ieo/industrial.cfm> accessed 4 August 2014

206 <http://www.cleantechinvestor.com/portal/fuel-cells/6422-mining-and-energy.html> accessed 4 August 2014 accessed 17 August 2014

207 <http://www.eia.gov/forecasts/ieo/industrial.cfm> accessed 4 August 2014

208 <http://www.ec.gc.ca/pollution/default.asp?lang=En&n=C6A98427-1> accessed 4 August 2014

part of chapter 1; the dire ecological implications of their pollution are discussed in the relevant sub-sections.

When it comes to ore mining, in addition to the issues of pollution and greenhouse gas production, some of the dangerous products of the petrochemical industry are used; as stated at pollutionissues.com²⁰⁹,

ores must be treated, generally with chemicals or heat to produce the metal of interest. Most bauxite ore, for example, is converted to aluminum oxide, which is used to make aluminum metal via heat and additives. Fuel minerals, such as coal and uranium, must also be processed using chemicals and other treatments to produce the quality of fuel desired.

Various accompanying ecological issues of the petrochemical industry (many discussed in the relevant sub-sections above) must therefore be factored in as environmentally-problematic aspects of the mining industry. The same source elaborates on some of the pollution details:

After the ore is removed from the ground, it is crushed so that the valuable mineral in the ore can be separated from the waste material and concentrated by flotation (a process that separates finely ground minerals from one another by causing some to float in a froth and others to sink), gravity, magnetism, or other methods, usually at the mine site, to prepare it for further stages of processing. The production of large amounts of waste material (often very acidic) and particulate emission have led to major environmental and health concerns with ore extraction and concentration. Additional processing separates the desired metal from the mineral concentrate.

Still on the topic of pollution associated with mining, acid mine drainage needs to be mentioned for its enduring environmentally-polluting character. As detailed at earthisland.org²¹⁰,

The primary cause of... lasting pollution is acid mine drainage. Mining exposes sulfide-bearing ore that generates sulfuric acid and mixes with water. This outflow of acidic water, otherwise known as acid mine drainage, contaminates drinking water aquifers, lakes, and streams, agricultural lands, and prime fish and wildlife habitat. Because acid mine drainage can't be stopped, once started it must be treated until the acid generating material runs out. As acknowledged in government mining permits, this can take hundreds or thousands of years. ... "No hard rock open pit mines exist today that can demonstrate that acid mine drainage can be stopped once it occurs on a large scale," says Dr. Glenn Miller, professor of environmental science at the University of Nevada.

An Earthworks report, released in 2013, called 'Polluting the Future'²¹¹, has the following eye-opening information to add about some of the ecological impacts of mining:

In the midst of declining fresh water supplies, an increasing number of hard rock mining companies are generating water pollution that will last for hundreds or thousands of years and new projects are on the horizon. Perpetual management of mines is a rapidly escalating national dilemma. Our research shows, for the first time, the staggering amount of our nation's water supplies that are perpetually polluted by mining. A lengthy review of government documents reveals that an estimated 17 to 27 billion gallons of polluted water will be generated by forty mines each year, every year, in perpetuity. ... Perpetual pollution from metal mines has contaminated drinking water aquifers, created long-standing public health risks, and destroyed fish and wildlife and their habitat.

209 <http://www.pollutionissues.com/Li-Na/Mining.html> accessed 4 August 2014

210 http://www.earthisland.org/journal/index.php/elist/eListRead/us_mines_are_causing_water_pollution_that_will_last_for_centuries_says/ accessed 4 August 2014

211 http://www.earthworksaction.org/library/detail/polluting_the_future#.U98znt8chwA accessed 4 August 2014

Pollutionissues.org²¹² adds that

Acid mine drainage (AMD) is a potentially severe pollution hazard that can contaminate surrounding soil, groundwater, and surface water. The formation of acid mine drainage is a function of the geology, hydrology, and mining technology employed at a mine site. The primary sources for acid generation are sulfide minerals, such as pyrite (iron sulfide), which decompose in air and water. Many of these sulfide minerals originate from waste rock removed from the mine or from tailings. If water infiltrates pyrite-laden rock in the presence of air, it can become acidified, often at a pH level of two or three. This increased acidity in the water can destroy living organisms, and corrode culverts, piers, boat hulls, pumps, and other metal equipment in contact with the acid waters and render the water unacceptable for drinking or recreational use.

The Blacksmiths Institute²¹³ raises the issue of mercury pollution from ‘artisanal’ gold mines, which is to say ‘smaller-scale’ gold mines: “According to the United Nations Industrial Development Organization (UNIDO), as much as 95 percent of all mercury used in artisanal gold mining is released into the environment, constituting a danger on all fronts – economic, environmental and human health”. 95 per cent of all mercury use in artisanal gold mining is 1000 tons of mercury annually, which is an estimated 30 per cent of total anthropogenic mercury release into the environment annually. The same source explicitly draws attention to the dangers for human beings of such pollution, but in doing so also shows how environments are impacted upon: “Once mercury is released into waterways, it enters the food chain through the digestion of bacteria and becomes the far more toxic – methylmercury. Methylmercury bioaccumulates in the food chain and is ingested by residents of downstream communities as they eat contaminated fish”.

National Geographic²¹⁴ paints a more severe picture of mercury pollution in gold mining: it details information about “tons of mercury released during the process of separating gold from rock. In small-scale gold mining, UNIDO estimates, two to five grams of mercury are released into the environment for every gram of gold recovered – a staggering statistic, given that mercury poisoning can cause severe damage to the nervous system and all major organs. According to Peruvian environmentalists, the mercury released at La Rinconada and the nearby mining town of Ananea is contaminating rivers and lakes down to the coast of Lake Titicaca, more than a hundred miles away”.

Finally, in summary, three ecological ‘categories’, namely air, land, and water, affected by the mining industry, are explained at pollutionissues.org²¹⁵:

Air. All methods of mining affect air quality. Particulate matter is released in surface mining when overburden is stripped from the site and stored or returned to the pit. When the soil is removed, vegetation is also removed, exposing the soil to the weather, causing particulates to become airborne through wind erosion and road traffic. Particulate matter can be composed of such noxious materials as arsenic, cadmium, and lead. In general, particulates affect human health adversely by contributing to illnesses relating to the respiratory tract, such as emphysema, but they also can be ingested or absorbed into the skin.

Land. Mining can cause physical disturbances to the landscape, creating eyesores such as waste-rock piles and open pits. Such disturbances may contribute to the decline of wildlife and plant species in an area. In addition, it is possible that many of the premining surface features cannot be replaced after mining ceases. Mine subsidence (ground movements of the earth's surface due

212 <http://www.pollutionissues.com/Li-Na/Mining.html#ixzz39PX2HU2w> accessed 4 August 2014

213 http://www.blacksmithinstitute.org/artisanal-gold-mining.html#_ftnref accessed 4 August 2014

214 <http://ngm.nationalgeographic.com/2009/01/gold/larmer-text/12> accessed 4 August 2014

215 <http://www.pollutionissues.com/Li-Na/Mining.html#ixzz39PX2HU2w> accessed 4 August 2014

to the collapse of overlying strata into voids created by underground mining) can cause damage to buildings and roads. Between 1980 and 1985, nearly five hundred subsidence collapse features attributed to abandoned underground metal mines were identified in the vicinity of Galena, Kansas, where the mining of lead ores took place from 1850 to 1970. The entire area was reclaimed in 1994 and 1995.

Water. Water-pollution problems caused by mining include acid mine drainage, metal contamination, and increased sediment levels in streams. Sources can include active or abandoned surface and underground mines, processing plants, waste-disposal areas, haulage roads, or tailings ponds. Sediments, typically from increased soil erosion, cause siltation or the smothering of streambeds. This siltation affects fisheries, swimming, domestic water supply, irrigation, and other uses of streams.

2.7 The meat and fish industries

The broad ecological issues associated with the meat industry are, as it will be seen, largely the same as the ecological issues associated with agriculture; as Harold A. Mooney, professor of biological sciences at Stanford, summaries²¹⁶, "We are seeing tremendous environmental problems with these operations [i.e. large scale livestock operations], from land degradation and air and water pollution to loss of biodiversity" – these issues have been explored in various previous sub-sections. The fish industry has had and still has its own consequences for ecology, although the particular kinds of ecological impact are different to those of the meat industry.

When it comes to the meat industry and issues of sustainability, the main concern underlying all others is quite simply that the amount of grain needed to feed 'livestock' killed and then eaten by human beings is enormous, and enormous amounts of land are dedicated to monocrops that serve the purpose of feeding the livestock; globalissues.org²¹⁷, for example, points out that "[m]ore than one third of the world's grain harvest is used to feed livestock", and according to the Food and Agriculture Association of the United States (FAO)²¹⁸, "[g]razing occupies 26 percent of the Earth's terrestrial surface". A consequence of such a large amount of crop and grazing space is deforestation – according to Greenpeace²¹⁹, "all the wild animals and trees in more than 2.9 million acres of the Amazon rain forest in Brazil were destroyed in the 2004-2005 crop season in order to grow crops that are used to feed chickens and other animals in factory farms" – and with such deforestation comes the loss of biodiversity and topsoil, and water sources accordingly become defiled, as discussed in an earlier sub-section. These kinds of issues with livestock commodification are acknowledged by dozens of sources, an example being People for the Ethical Treatment of Animals (PETA) – it is pointed out at their website²²⁰ that livestock "grazing is the number one reason that plant species in the United States become threatened and go extinct, and it also leads to soil erosion and eventual desertification that renders once-fertile land barren".

216 <http://news.stanford.edu/pr/2007/pr-livestockrev-021407.html> accessed 19 August 2014

217 <http://www.globalissues.org/article/240/beef> accessed 18 August 2014

218 <http://www.fao.org/ag/magazine/0612sp1.htm> accessed 19 August 2014

219 <http://www.peta.org/issues/animals-used-for-food/meat-wastes-natural-resources/#ixzz3AjWreF6g> accessed 18 August 2014

220 <http://www.peta.org/issues/animals-used-for-food/meat-wastes-natural-resources/#ixzz3AjTijc5M> accessed 18 August 2014

The one-third of the world's grain harvest, mentioned above, used to feed slaughter-animals, consists largely of gmo-grains: gmoinside.com²²¹ points out that 94% of soy and 88% of corn grown in the US, for example, is genetically modified, and these are dominant livestock-feed crops²²²:

in the United States (the world's foremost GMO producer and consumer) and in other major GMO producing countries, an overwhelming majority of the GMO crop is not even consumed directly by humans. In the US, livestock has been fed genetically engineered crops since these crops were first introduced in 1996 and each of the top 6 GMO crops (soy, cotton, corn, canola, sugar beet, and alfalfa) are heavily utilized by the US and global animal feed market.

The implication is that the meat industry has become interlinked with bio-tech industry, and the same issues apply (see the relevant sub-section, 2.8), as do the ecological issues outlined in the sub-section entitled 'genetically modified organisms (1.8). Some elaboration of facts is offered at scientificamerican.com²²³: "Livestock are typically fed corn, soybean meal and other grains which have to first be grown using large amounts of fertilizer, fuel, pesticides, water and land. EWG estimates that growing livestock feed in the U.S. alone requires 167 million pounds of pesticides and 17 billion pounds of nitrogen fertilizer each year across some 149 million acres of cropland". Some of the kinds of issues, explored already in the relevant sub-sections, are the dangerous pesticides and fertilisers used in the GMO industry and the impact they have on the ecology of an area; the killing of non-target species of insects and bacteria (etc.) that occurs with such chemical-use; the contamination of water sources with chemicals. These kinds of issues are all associated with the petrochemical industry as well, which has been explored above in the relevant sub-section.

The meat industry, as evident in the quote from scientificamerican.com above, is also heavily reliant on fossil-fuels; this is further explained at peta.org²²⁴, where it is pointed out that it "takes more than 11 times as much fossil-fuel to make one calorie from animal protein as it does to make one calorie from plant protein. Raising animals for food gobbles up precious energy". Readers of information at the website are invited to "add up the energy-intensive stages of raising animals for food":

(1) grow massive amounts of corn, grain, and soybeans (with all the required tilling, irrigation, crop-dusters, etc.); (2) transport the grain and soybeans to feed manufacturers on gas-guzzling 18-wheelers; (3) operate the feed mills (requiring massive energy expenditures); (4) transport the feed to the factory farms (again, in gas-guzzling vehicles); (5) operate the factory farms; (6) truck the animals many miles to slaughter; (7) operate the slaughterhouse; (8) transport the meat to processing plants; (9) operate the meat-processing plants; (10) transport the meat to grocery stores; (11) keep the meat refrigerated or frozen in the stores until it's sold.

Furthermore, the meat industry is responsible for the release of alarming amounts of greenhouse gas into the atmosphere, thereby playing a considerable role in climate change. According to the FAO²²⁵,

the livestock sector has assumed an often unrecognized role in global warming. Using a methodology that considered the entire commodity chain..., FAO estimated that livestock are responsible for 18 percent of greenhouse gas emissions, a bigger share than that of transport. It

221 <http://gmoinside.org/gmos-in-animal-feed/> accessed 18 August 2014

222 <http://gmoinside.org/gmos-in-animal-feed/> accessed 18 August 2014

223 <http://www.scientificamerican.com/article/meat-and-environment/> accessed 18 August 2014

224 <http://www.peta.org/issues/animals-used-for-food/meat-wastes-natural-resources/> accessed 18 August 2014

225 <http://www.fao.org/ag/magazine/0612sp1.htm> accessed 18 August 2014

accounts for nine percent of anthropogenic carbon dioxide emissions, most of it due to expansion of pastures and arable land for feed crops. It generates even bigger shares of emissions of other gases with greater potential to warm the atmosphere: as much as 37 percent of anthropogenic methane, mostly from enteric fermentation by ruminants, and 65 percent of anthropogenic nitrous oxide, mostly from manure.

The [scientificamerican.com](http://www.scientificamerican.com) source used above adds that in spraying such huge amounts of pesticides and fertilisers in the growing of feed-crops, “copious amounts of nitrous oxide, a greenhouse gas 300 times more potent than carbon dioxide” are produced.

Biodiversity is greatly reduced, if not eliminated, when large-scale activity takes place for the sake of producing meat for humans to consume. The FAO makes this clear²²⁶:

The sheer quantity of animals being raised for human consumption also poses a threat of the Earth's biodiversity. Livestock account for about 20 percent of the total terrestrial animal biomass, and the land area they now occupy was once habitat for wildlife. In 306 of the 825 terrestrial eco-regions identified by the Worldwide Fund for Nature, livestock are identified as ‘a current threat’, while 23 of Conservation International's 35 ‘global hotspots for biodiversity’ – characterized by serious levels of habitat loss – are affected by livestock production.

[Peta.org](http://peta.org)²²⁷ has the following information to add about the large amount of water used by the meat industry in the US alone:

Nearly half of all the water used in the United States goes to raising animals for food. In 2008, John Anthony Allan, a professor at King's College London and the winner of the prestigious Stockholm Water Prize, urged people worldwide to go vegetarian because of the tremendous waste of water involved with eating animals.

And:

It takes more than 2,400 gallons of water to produce 1 pound of meat, while growing 1 pound of wheat only requires 25 gallons. You save more water by not eating a pound of meat than you do by not showering for six months!”

The same source adds the following relevant information: “What do we get back from all the grain, fossil-fuels, and water that go into making animal products? Tons and tons of feces. According to the Environmental Protection Agency (EPA), the runoff from factory farms pollutes our waterways more than all other industrial sources combined”.

Already, enough evidence about the meat industry has been offered to show it as highly problematic in the context of the ecological crisis. It is therefore unsurprising that at a 2007 symposium named, “Livestock in a Changing Landscape: Drivers, Consequences and Responses”, researchers from Stanford University presented findings which were reported on as follows²²⁸: “The harmful environmental effects of livestock production are becoming increasingly serious at all levels – local, regional, national and global – and urgently need to be addressed”.

Moving on to address the fishing industry: it has been largely responsible for the near decimation of fish species for several decades, to the point that the entire oceanic ecosystem is threatened; this has a huge knock-on effect for the chain of life on the planet. This issue can be seen at

226 <http://www.fao.org/ag/magazine/0612sp1.htm> accessed 18 August 2014

227 <http://www.peta.org/issues/animals-used-for-food/meat-wastes-natural-resources/> accessed 19 August 2014

228 <http://www.sciencedaily.com/releases/2007/02/070220145244.htm> accessed 18 August 2014

21stcenturychallenges.org²²⁹, where it is stated that the “United Nations estimates that 80% of world fish stocks are fully exploited or overfished and require precautionary management. The problem of commercial overfishing has become so intense that we have altered the basic food web, eliminating target species at the top of the food chain”. After the animals at the top of the food web are affected, the impact gets felt at the lower end; the same source explains: the elimination of target species at the top of the food chain

is followed by fishing down the food web until the catch becomes plankton-eating fish at the base of the food web. Habitat destruction from trawling at the bottom of the oceans disturbs an area of the seabed as large as Brazil, the Congo and India combined every year. The massive bycatch – or unintentional catch of fish, birds, turtles and mammals – adds to the impact on oceans.

The WWF²³⁰ states unambiguously that “The global fishing fleet is 2-3 times larger than what the oceans can sustainably support”. The same source adds the following information:

53% of the world’s fisheries are fully exploited, and 32% are overexploited, depleted, or recovering from depletion; Most of the top ten marine fisheries, accounting for about 30% of all capture fisheries production, are fully exploited or overexploited; Several important commercial fish populations have declined to the point where their survival is threatened; Unless the current situation improves, stocks of all species currently fished for food are predicted to collapse by 2048.

The global fishing industry is furthermore heavily reliant on the use of fossil-fuels. Two researchers, Tyedmers and Watson, published a paper in 2005 called ‘Fuelling global fishing fleets’²³¹; albeit somewhat out-dated already, the abstract to the paper holds relevance in light of the ecological issues of the fishing industry:

[W]e calculate that globally, fisheries burned almost 50 billion L of fuel in the process of landing just over 80 million t of marine fish and invertebrates for an average rate of 620 L t⁻¹. Consequently, fisheries account for about 1.2% of global oil consumption, an amount equivalent to that burned by the Netherlands, the 18th-ranked oil consuming country globally, and directly emit more than 130 million t of CO₂ into the atmosphere. From an efficiency perspective, the energy content of the fuel burned by global fisheries is 12.5 times greater than the edible-protein energy content of the resulting catch.

Clear here is the energy intensity of the fishing industry; all of the ecological issues with fossil-fuel extraction and use are therefore intertwined into this industry, as is the case with the livestock industry.

2.8 The bio-tech industry

The bio-tech industry is the one that propels the expansion of 'the gmo phenomenon' (sub-section 1.8); as has been seen in the GMO sub-section above, and to a lesser extent in the meat and fish industry sub-section (2.7), there are serious ecological consequences for the widespread planting, chemical spraying, and cross contamination of GMOs. Such problems have all been explained and

229 <http://www.21stcenturychallenges.org/focus/unsustainable-fishing/> accessed 18 August 2014

230 http://www.panda.org/about_our_earth/blue_planet/problems/problems_fishing/ accessed 18 August 2014

231 <http://www.ncbi.nlm.nih.gov/pubmed/16521840> accessed 18 August 2014

evidenced with references in the relevant sub-sections; a list of bullet points summarising the problems will be offered here (references can be found in the relevant sub-section):

- The pesticides used alongside a given gmo crop, typically glyphosate by Monsanto, is associated with high occurrences of a variety of adverse human conditions
- 'Bt' (*Bacillus thuringiensis*) crops adversely affect “non-target” and “beneficial organisms that partly constitute what is commonly referred to as 'the web of life'”
- GM crops and their associated herbicides can harm birds, insects, amphibians, marine ecosystems, and soil organisms
- GMOs reduce biodiversity, pollute water resources, and are unsustainable
- Roundup herbicide has been shown to cause birth defects in amphibians, embryonic deaths and endocrine disruptions, and organ damage in animals even at very low doses
- GM canola has been found growing wild in various areas, threatening to pass on its herbicide tolerant genes on to weeds
- Massive monocrops are genetically modified – for example, 94% corn and 88% soy in the US – and such massive crops go hand-in-hand with deforestation, loss of biodiversity, defilement of water sources, and loss of topsoil

The Union of Concerned Scientists²³², USA, have the following summative comment to make regarding some of the ecological issues with gmos:

GE crops do have the potential to cause a variety of health problems and environmental impacts. For instance, they may produce new allergens and toxins, spread harmful traits to weeds and non-GE crops, or harm animals that consume them.

At least one major environmental impact of genetic engineering has already reached critical proportions: overuse of herbicide-tolerant GE crops has spurred an increase in herbicide use and an epidemic of herbicide-resistant ‘superweeds,’ which will lead to even more herbicide use.

Finally, [actionbioscience.org](http://www.actionbioscience.org)²³³ offers a list of concerns, quoted here, that corroborate and add to the ecological concerns already offered; note that all these concerns place the biotech industry squarely 'under the spot light', so to speak, as it is the biotech industry that has unleashed GMOs into the world:

- the spread of transgenes to related weeds or conspecifics via crop-weed hybridization
- reduction of the fitness of non-target organisms through the acquisition of transgenic traits via hybridization
- the rapid evolution of resistance of insect pests such as Lepidoptera to Bt
- accumulation of the insecticidal Bt toxin, which remains active in the soil after the crop is ploughed under and binds tightly to clays and humic acids
- disruption of natural control of insect pests through intertrophic-level effects of the Bt toxin on predators
- unanticipated effects on non-target herbivorous insects (i.e., monarch butterflies) through deposition of transgenic pollen on foliage of surrounding wild vegetation
- vector-mediated horizontal gene transfer and recombination to create new pathogenic organisms

232 http://www.ucsusa.org/food_and_agriculture/our-failing-food-system/genetic-engineering/ accessed 19 August 2014

233 <http://www.actionbioscience.org/biotechnology/altieri.html> accessed 19 August 2014

2.9 The fractional reserve money industry

The fractional reserve banking industry is different to the several industries explored above in that it does not *directly* produce the typical environmentally-problematic phenomena associated with the 'other' industries (for example, the fossil-fuel industry). The 'other' industries can be shown to be directly engaged in, for examples, deforestation and loss of biodiversity, which links to several other ecological issues directly, such as the loss of topsoil and the defilement of fresh water sources. The fractional reserve banking industry, quite contrarily, deals with fiat currency, which is to say a debt-based currency largely digitised and therefore not tangible in the same way as, say, a bulldozed forest. However, the fractional reserve banking system, i.e. the monetary system 'regulated' by reserve and commercial banks in all nations, fuels the need to pay back the loans and the interest on loans inherent to the existence of fiat currency in the first place. The fractional reserve banking system therefore involves a viscous circle where constant economic growth is demanded by default, largely in the form of the continued growth of various industries that have traditionally been associated with monetary growth, the fossil-fuel industry being the main hub of such growth historically.

An interesting quote from the 'governor' of the US Federal Reserve in the 1930s and 1940s, Marriner Stoddard Eccles²³⁴, draws attention to the counter-intuitive notion that money *is* debt – this is an important concept to begin with when considering where money comes from and how the fractional reserve monetary system works to create new money. Questioned by congressman Patman about a past Federal Reserve purchase of U.S. government bonds, Eccles made the point that if “there were no debts in our money system, there wouldn't be any money”²³⁵. This is due to two main reasons, both of which will be explained below before turning briefly to the ecologically-problematic implications of the system.

The first reason involves government 'securities': according to businessdictionary.com²³⁶, government 'securities' are bonds, “notes, and other debt instruments sold by a government to finance its borrowings. These are generally long-term securities with the highest market ratings”. Note the use of the phrase *debt instrument* – securities are debt instruments issued by governments to other parties in order to achieve given ends. In the case of the sale of these debt instruments from a government to a reserve bank (via the government treasury and bond traders), the 'given end' is the creation of a monetary deposit in selected commercial banks, which the reserve bank 'creates': the reserve bank purchases the government securities, which is to say that it purchases debt-instruments from the government, and in turn the reserve bank will authorise credit in selected commercial banks with deposits of whatever amounts – more on this below. For now, it is important to consider this slightly different definition of 'government security' from a second source²³⁷: “A government debt obligation (local or national) backed by the credit and taxing power of a country; as a result, there is very little risk of default”. It is clear again in this second definition of government security that what a government trades with a reserve bank *is an obligation rather than anything immediately tangible*. The counter-intuitive aspect of the above 'transaction' is that *the reserve bank does not buy government securities with money it has itself accrued* and stored in its own

234 <http://www.federalreservehistory.org/People/DetailView/75> accessed 2 August 2014

235 <https://www.mises.org/library/our-money-based-debt> accessed 13 April 2017

236 <http://www.businessdictionary.com/definition/government-securities.html#ixzz3A4L8qARY> accessed 12 August 2014

237 <http://financial-dictionary.thefreedictionary.com/Government+Security> accessed 12 August 2014

reserves²³⁸. This is explained in *Modern Money Mechanics*²³⁹, a booklet published by the Federal Reserve Bank of Chicago detailing the workings of the modern monetary system. To quote the opening line of the online booklet, the “purpose of this booklet is to describe the basic process of money creation in a 'fractional reserve' banking system” (in the example below, the reserve bank is the American one, called the Federal Reserve; from now on, 'reserve bank', 'Federal Reserve', and 'the Fed', will all be used interchangeably):

Suppose the Federal Reserve System, through its trading desk at the Federal Reserve Bank of New York, buys \$10,000 of Treasury bills from a dealer in U. S. government securities. In today's world of computerized financial transactions, the Federal Reserve Bank pays for the securities with an "electronic" check drawn on itself. Via its "Fedwire" transfer network, the Federal Reserve notifies the dealer's designated bank (Bank A) that payment for the securities should be credited to (deposited in) the dealer's account at Bank A. At the same time, Bank A's reserve account at the Federal Reserve is credited for the amount of the securities purchase. The Federal Reserve System has added \$10,000 of securities to its assets, which it has paid for, in effect, by creating a liability on itself in the form of bank reserve balances.

The final words of the above paragraph need to be reiterated, as they summarise the first reason why money in the global fractional reserve system *is* debt: the Fed pays for government securities “by creating a liability on itself in the form of bank reserve balances”; in other words, the Fed 'pays' for the purchase of government securities via the creation (credit) of the reserve deposit in the bank – nothing is deducted from either the Fed nor the Bank, while government is left with a debt obligation. Neither the government nor the Fed, it can therefore be argued, work with anything tangible in the creation of money; instead, the government uses 'obligations' (in the commercial sectors these are called 'securities' or 'bonds' – debt instruments) while the Fed 'purchases' such obligations by creating 'liabilities on itself'. This strange interaction between the Fed and the government is the first step in adding new money to the money supply. But the Fed partly makes its money from interest repaid on the original amount it draws on itself; this is stated at federalreserveeducation.org²⁴⁰: “The Federal Reserve's income is derived primarily from the interest on U.S. government securities that it has acquired through open market operations”. It is not inaccurate to state that the Fed earns interest from creating money out of nothing – later on in this section, it will be seen that this amounted to \$700 billion in the US by 2008, and grew to \$2 trillion in 2013; in response to such a system, Wright Patman (the congressman mentioned above who questioned Eccles in the 1940s) said on September 29, 1941, as reported in the Congressional Record of the House of Representatives (pages 7582-7583), records which are quoted at the website michaeljournal.org²⁴¹:

When our Federal Government, that has the exclusive power to create money, creates that money and then goes into the open market and borrows it and pays interest for the use of its own money, it occurs to me that that is going too far. I have never yet had anyone who could, through the use of logic and reason, justify the Federal Government borrowing the use of its own money... I am saying to you in all sincerity, and with all the earnestness that I possess, it is absolutely wrong for the Government to issue interest-bearing obligations. It is not only wrong: it is extravagant. It is not only extravagant, it is wasteful. It is absolutely unnecessary.

238 ...which is why the appellation 'Reserve Bank' is entirely misleading.

239 http://en.wikisource.org/wiki/Modern_Money_Mechanics/Bank_Deposits_%E2%80%94_How_They_Expand_or_Contract accessed 12 August 2014

240 http://www.federalreserveeducation.org/faq/topics/fed_basics.cfm accessed 12 August 2014

241 <http://www.michaeljournal.org/feddebunked.htm> accessed 12 August 2014

For the sake of clarity now, a description of the process whereby money is created via the 'transaction' between government and reserve bank will be offered again, this time by globalresearch.ca²⁴²:

When the government is short of funds, the Treasury issues bonds and delivers them to bond dealers, which auction them off. When the Fed wants to “expand the money supply” (create money), it steps in and buys bonds from these dealers with newly-issued dollars acquired by the Fed for the cost of writing them into an account on a computer screen. These manoeuvres are called “open market operations” because the Fed buys the bonds on the “open market” from the bond dealers. The bonds then become the “reserves” that the banking establishment uses to back its loans.

This process indebts governments to reserve banks – in trading government securities for the computerised deposits of money created 'from nothing', so to speak, the fed is indeed attaining a 'bond' from the government, and a bond is a promise to repay; the following definition from investopedia.com²⁴³ draws attention to the fact that 'security' and 'bond' are synonymous, and that a promise to repay is inherent in the 'transaction':

A bond (or debt obligation) issued by a government authority, with a promise of repayment upon maturity that is backed by said government. A government security may be issued by the government itself or by one of the government agencies. These securities are considered low-risk, since they are backed by the taxing power of the government.

Further defining 'treasury bonds', the same website²⁴⁴ draws attention to the obligation to pay interest to the fed by the government: “A marketable, fixed-interest ...government debt security with a maturity of more than 10 years. Treasury bonds make interest payments semi-annually and the income that holders receive is only taxed at the federal level”. The following definition of government security, already partly used in this section, highlights the fact that the interest paid to the fed by the government comes from general taxes of a country: “A government debt obligation (local or national) backed by the credit and taxing power of a country”. In short, the taxes collected from a citizenry pay for the interest owed to the Fed, as evident is the following comment from Patman²⁴⁵:

We have what is known as the Federal Reserve Bank System. That system is not owned by the Government. Many people think that it is, because it says 'Federal Reserve'. It belongs to the private banks, private corporations. So we have farmed out to the Federal Reserve Banking System that is owned exclusively, wholly, 100 percent by the private banks — we have farmed out to them the privilege of issuing the Government's money. If we were to take this privilege back from them, we could save the amount of money that I have indicated in enormous interest charges [i.e. taxation].

To repeat, as stated above, the US debt to the fed reached 2 trillion dollars in August 2013 – this is the contemporary “amount of money” that Patman would be referencing if he were commenting in the year 2013.

The second reason why Eccles's counter-intuitive statement above – that if “there were no debts in our money system, there wouldn't be any money” – is true is due to the fact that banks are only

242 <http://www.globalresearch.ca/who-owns-the-federal-reserve/10489> accessed 12 August 2014

243 <http://www.investopedia.com/terms/g/governmentsecurity.asp> accessed 14 August 2014

244 <http://www.investopedia.com/terms/t/treasurybond.asp> accessed 14 August 2014

245 <http://www.michaeljournal.org/feddebunked.htm> accessed 15 August 2014

required to have a 'reserve' of actual deposits of around ten per cent, as stated in Modern Money Mechanics²⁴⁶: “the reserve requirement against most transaction accounts is 10 percent”. A footnote is added that provides more specific information on this limit: “For each bank, the reserve requirement is 3 percent on a specified base amount of transaction accounts and 10 percent on the amount above this base”; this is mentioned because, in attempting to find information on the South African Reserve Bank (SARB) for comparison reasons, its minimum reserve ratio is identified only as 2.5 per cent in a document issued by the SARB²⁴⁷: “the Reserve Bank ... introduced one reserve ratio of 2,5 per cent on the total liabilities of banks”. Whether or not one is talking about 'base amount' reserve limits of 2.5 per cent or 3 per cent, or a 10 per cent 'above base' limit, does not really matter because the fractional reserve monetary system entails the creation of money from debt regardless of minimum reserve ratios, and this is the case for all countries using fiat currency, which is to say every country on Earth. For the purpose of this study, the amount referred to as an example in the Modern Money Mechanics booklet will be maintained for the purpose of providing graphs from the booklet – the amount is \$10 000 (American dollars). The following two graphs from the .pdf version of Modern Money Mechanics²⁴⁸ outline how money is loaned out – and indeed created – with a ten per cent reserve limit:

Page 11.
*Thus through stage after stage of expansion,
 "money" can grow to a total of 10 times the new
 reserves supplied to the banking system....*

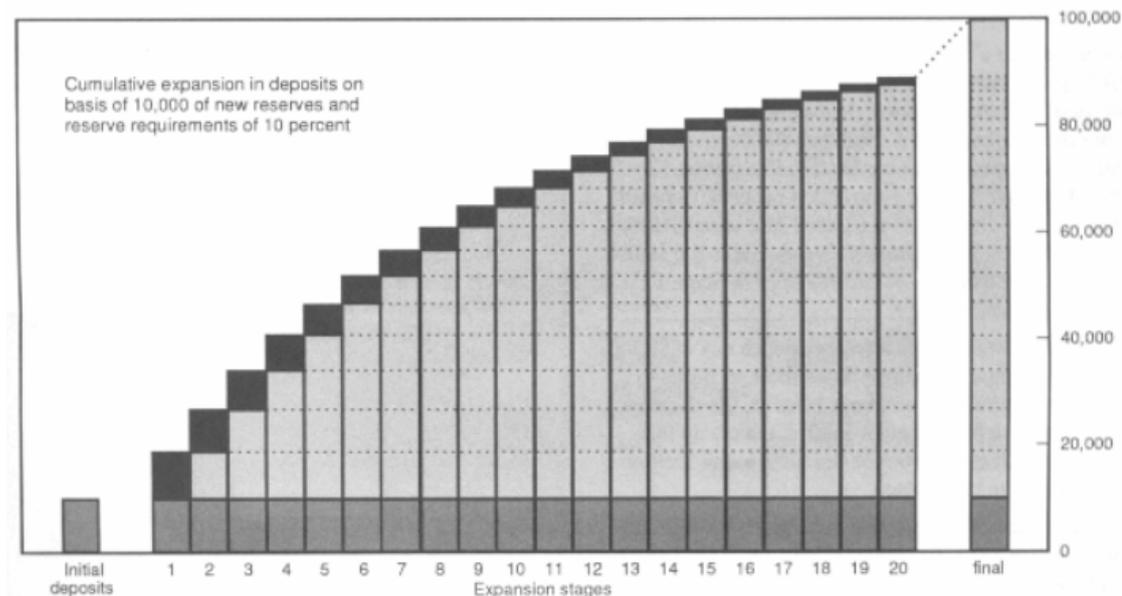
	Assets			Liabilities	
	Total	(Required)	(Excess)	Loans and Investments	Deposits
Reserves provided	10,000	1,000	9,000	-	10,000
Exp. Stage 1	10,000	1,900	8,100	9,000	19,000
Stage 2	10,000	2,710	7,290	17,100	27,100
Stage 3	10,000	3,439	6,561	24,390	34,390
Stage 4	10,000	4,095	5,905	30,951	40,951
Stage 5	10,000	4,686	5,314	36,856	46,856
Stage 6	10,000	5,217	4,783	42,170	52,170
Stage 7	10,000	5,695	4,305	46,953	56,953
Stage 8	10,000	6,126	3,874	51,258	61,258
Stage 9	10,000	6,513	3,487	55,132	65,132
Stage 10	10,000	6,862	3,138	58,619	68,619
...
...
...
Stage 20	10,000	8,906	1,094	79,058	89,058
...
...
...
Final Stage	10,000	10,000	0	90,000	100,000

*...as the new deposits created by loans
 at each stage are added to those created at all
 earlier stages and those supplied by the initial
 reserve-creating action.*

246 http://en.wikisource.org/wiki/Modern_Money_Mechanics/Bank_Deposits_%E2%80%94_How_They_Expand_or_Contract#ref_55 accessed 3 August 2014

247 <https://www.resbank.co.za/BanknotesandCoin/CurrencyManagement/Documents/SA%20Reserve%20Bank%20Act%2090%20of%201989.pdf> accessed 3 August 2014

248 <http://liberty-tree.ca/research/Modern.Money.Mechanics> accessed 14 August 2014



The above graphs detail a process wherein, from a reserve of \$10 000, new money to the value of \$100 000 is created. It is explained in Modern Money Mechanics²⁴⁹ how this is possible:

Of course, they [- the banks -] do not really pay out loans from the money they receive as deposits. If they did this, no additional money would be created. What they do when they make loans is to accept promissory notes in exchange for credits to the borrowers' transaction accounts. Loans (assets) and deposits (liabilities) both rise by \$9,000. Reserves are unchanged by the loan transactions. But the deposit credits constitute new additions to the total deposits of the banking system.

As the first graph shows, after the amount of 10,000 has been deposited and 9,000 of it loaned out under the 10% reserve limit, a bank will (presumably) be paid back the 9,000 by whoever borrowed it, so the bank will literally count the 9,000 loan amount as part of its deposits and work with 19,000 as the new deposit amount. Ten per cent of that 19,000 becomes the new reserve amount of 1900, this time leaving 8,100 as 'excess' on the original 10,000 deposit, and this 8100 is loaned out alongside the 9,000 already loaned – the 8,100 will also presumably be paid back, so again it is considered to be part of the bank's deposits. Under the 10% reserve requirement, the gradually decreasing 'excess' will continue to be loaned on the original 10,000 amount until the excess value is zero, by which time new 'money' has grown to 100,000, i.e. ten times the original deposit amount. As the above quote from Modern Money Mechanics reveals, this would not be possible if a bank actually gave any of the original deposit to someone as the loan; rather, in participating in the fractional reserve process, someone who takes a loan creates the amount of money they borrow simply in 'transacting' with the bank. Of course, the person loaning the money also agrees to pay back interest on the loan amount when s/he signs for the 'loan', but as has been seen, money to pay the interest can come into existence 1) only when the government becomes further indebted to the fed when the latter buys government securities to back the creation of new bank deposits (a digital action only that 'costs' the fed or reserve bank nothing but guarantees it long-term interest repayments), and 2) when more loans are granted by banks. Astronomical levels of debt, including interest on loans, therefore, has accrued since the fractional reserve system began – world debt is

²⁴⁹ http://en.wikisource.org/wiki/Modern_Money_Mechanics/Bank_Deposits%E2%80%94How_They_Expand_or_Contract accessed 14 August 2014

above 54 trillion UD dollars and rising²⁵⁰. Baring in mind the money-creation process described above, and considering the 54+ trillion dollar rising global debt, the following comment from Professor Antal E. Fekete, founder of the "New Austrian School", is provided with some context²⁵¹:

The world economy, sagging as it is under the weight of its debt tower and fast depreciating irredeemable currencies, is clearly on its way to self-destruction. The forcible elimination of, first, silver and then a hundred years later of gold, from the monetary system removed the only ultimate extinguishers of debt we have. In consequence, total debt can only grow, never contract. The process is hidden since the unpaid and unpayable debt is accumulating as sovereign debt of governments. The world is deluding itself that sovereign debt can increase indefinitely as governments can extend its maturity indefinitely. In 2008 we had the wake-up call that it cannot.

The Bank of England released two documents in 2014, one called 'Money in the modern economy: an introduction'²⁵², the other 'Money creation in the modern economy'²⁵³, in which the above information about the creation of money is clarified and corroborated. The second document, for example, begins with the words, "This article explains how the majority of money in the modern economy is created by commercial banks making loans". In the first, the following is found:

"Most money in the modern economy is in the form of bank deposits, which are created by commercial banks themselves... When a bank makes a loan to one of its customers it simply credits the customer's account with a higher deposit balance. At that instant, new money is created..."

The second article provides further corroborative information, information that succinctly shatters the 'common' conception that when a bank loans money to a customer, it does so by lending out money that has been deposited by other customers: "rather than banks lending out deposits that are placed with them, the act of lending creates deposits — the reverse of the sequence typically described in textbooks".

Globalresearch.ca²⁵⁴ adds some interesting perspective on the implications that the fractional reserve money system has for the creation of interest on loans:

The website of the Federal Reserve Bank of New York explains that as money is redeposited and relent throughout the banking system, this 10% held in "reserve" can be fanned into ten times that sum in loans; that is, \$10,000 in reserves becomes \$100,000 in loans. Federal Reserve Statistical Release H.8 puts the total "loans and leases in bank credit" as of September 24, 2008 at \$7,049 billion. Ten percent of that is \$700 billion. That means we the taxpayers will be paying interest to the banks on at least \$700 billion annually – this so that the banks can retain the reserves to accumulate interest on ten times that sum in loans.

To reiterate: \$700 billion owed to banks interest in 2008, based on a 'transaction' between the US government and the US federal reserve where the former 'traded' debt-instruments for the latter's electronic 'creation' of deposits in selected banks (by August 2013, this amount exceeded 2 trillion dollars²⁵⁵ – a consequence of the unprecedented rates at which the USA has been issuing new money via the processes described here since the financial crisis of 2008). The 'deposit' of

250 http://www.economist.com/content/global_debt_clock accessed 16 August 2014

251 http://wiki.mises.org/wiki/Criticism_of_fractional_reserve_banking accessed 16 August 2014

252 <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q1prereleasemoneyintro.pdf> accessed 13 August 2014

253 <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q1prereleasemoneycreation.pdf> accessed 13 August 2014

254 <http://www.globalresearch.ca/who-owns-the-federal-reserve/10489> accessed 14 August 2014

255 <http://rt.com/usa/fed-reserve-two-trillion-747/> accessed 15 August 2014

computerised money by the fed into a commercial bank after the securitisation process, a process whereby government is indebted to the fed (reason one above supporting the view that money is debt), is part of the creation of the said bank's reserves; such a deposit only exists electronically, based on a promise by government to honour its 'debt' to the fed via taxation, but the said commercial bank counts the electronic sum of money as part of its reserves. So part of the ten per cent 'reserves' that a commercial bank loans out in the fractional reserve system described in the above paragraphs is the 'money' 'created from debt' and is used to create more 'money from debt' through the counter-intuitive bank-lending fractional reserve process – indeed, the only way to make sense of how any of this works is to view money as debt, as Eccles did. Patman realised this, a realisation that sparked the kind of response from him already seen in this sub-section, as well as the following one, 'introduced' by globalresearch.ca²⁵⁶ at the opening of this quote:

In another bit of sleight of hand known as 'fractional reserve' lending, the same reserves are lent many times over, further expanding the money supply, generating interest for the banks with each loan. It was this money-creating process that prompted Wright Patman, Chairman of the House Banking and Currency Committee in the 1960s, to call the Federal Reserve "a total money-making machine." He wrote: "When the Federal Reserve writes a check for a government bond it does exactly what any bank does, it creates money, it created money purely and simply by writing a check."

What does any of the above information about the creation of the majority of money in circulation by commercial banks making loans have to do with the ecological crisis? An initial glimpse of an answer can first be seen with the World Bank²⁵⁷: one document issued by it contains the following: "The world economy needs ever-increasing amounts of energy to sustain economic growth". Economic growth is measured in numbers that increase as the money supply does, but it has been shown above that as the money supply is increased, so is global debt (money *is* debt), inherent in which is an obligation to pay money back (which requires more money expansion/creation, entailing more debt), hence constant expansion of the 'lucrative' industrial activity historically dominant in global business. This kind of industrial activity comes in many forms, and it has been shown above that some of the largest ones (for example, the fossil-fuel industry) have devastating consequences for the ecology of the planet. The 2017 Oxfam report on global inequality called 'An economy of the 99%'²⁵⁸ clearly states the consequence of this link between the economic model I have described in this sub-section and the ecological consequences: "Our economic model is based on exploiting our environment and ignoring the limits of what our planet can bear. It is an economic system that is a major driver of runaway climate change".

With world debt at over 54 trillion dollars²⁵⁹ in mid-August 2014, it is not unreasonable to state that recession is always in the background of economic discourse – indeed, various countries have been in, or still are in, or border close to, a state of recession since the 2008 financial crisis. This is unsurprising considering the information I have collated on the debt-based nature of this economic model – massive debt is inherent to this system, with recessions being part-and-parcel of the

256 <http://www.globalresearch.ca/who-owns-the-federal-reserve/10489> accessed 14 August 2014

257 <http://data.worldbank.org/topic/energy-and-mining> accessed 3 August 2014

258 https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-economy-for-99-percent-160117-summm-en.pdf accessed 7 February 2017

259 http://www.economist.com/content/global_debt_clock accessed 15 August 2014

system's *modus operandi*. Positivemoney.org²⁶⁰ outlines the following ecological consequence of such a situation:

One direct link between the current monetary system and the environment is the effect that recessions have on environmental regulation and investing in the long term. In a recession it is common to hear the argument that costs to businesses are too high due to regulations which are represented as onerous, and that the relaxation of these regulations would allow businesses to hire, resulting in reduced unemployment and increased output.

Although the validity of this argument is debatable, it is propagated by those who believe it to be true, by those who see the recession as an opportunity to lower their costs, and by those who did not believe the regulations were required in any case. While the benefits of environmental regulations accrue over the long-term, the government's chances of re-election usually hinge on the short-term health of the economy. As such the long-term environmental benefits of regulation often lose out to short-term political and economic considerations.

Furthermore, it is pointed out at Positivemoney.org quite simply that the current monetary system requires constant growth. Constant economic growth implies lucrative activity, much of which is again in the form of the expansion of existing industries of the type already commented upon above. The monetary system, according to the aforementioned source, is engaged in constant economic growth in four ways; to quote directly from the source:

- Debt repayments: since loans have to be repaid in instalments on fixed dates people are incentivised to pursue activities that provide quick returns. People pay off debt by producing more goods and services. Higher levels of debt incentivise higher levels of growth.
- Asset price bubbles occur as banks create money through lending into assets they can receive the largest returns on, e.g. housing. In order to maintain standards of living when faced with an increase in the cost of essentials e.g. rent, individuals must either work more in order to pay the higher prices, or borrow more to make up the difference. Both borrowing and working more increase economic growth.
- Loan repayments: when loans are repaid money is destroyed and the money supply shrinks. This generally results in a self reinforcing recession. To avoid this, new loans need to be made simultaneously, increasing a need for growth as above.
- Indebtedness in society is liable to increase economic activity, as individuals struggle to pay off the interest on their debt. In other words, debt drives growth.

The need for continued economic growth fuelled partly by the fractional reserve money system is commented on at wiki.mises.org²⁶¹; the two "critics" are listed as David Korten and Henri Monibot: there are critics "who contend fractional reserve banking (by creating a necessity for indefinite economic growth) leads to environmental destruction and a sudden, catastrophic depletion of the earth's natural resources as the unsustainable, exponential consumption of the world's scarce natural resources reaches its inevitable limits". This is in keeping with the observation made by the 2017 Oxfam report I have already quoted; to repeat, "Our economic model is based on exploiting our environment and ignoring the limits of what our planet can bear. It is an economic system that is a major driver of runaway climate change".

²⁶⁰ <http://www.positivemoney.org/issues/environment/> accessed 16 August 2014

²⁶¹ http://wiki.mises.org/wiki/Criticism_of_fractional_reserve_banking#cite_ref-212 accessed 16 August 2014

Such information contextualises the following statement made by [neweconomics.org](http://www.neweconomics.org)²⁶²: “From climate change to the financial crisis it is clear the current economic system is not fit for purpose”. It is pointed out at the same site²⁶³ that “there are serious questions as to whether a relatively unregulated system dominated by private money creation in the form of interest bearing debt is best suited to the challenges facing modern humanity”.

[Note: Extensive information about the counter-intuitive process of money creation and the consequences of the process can be found at wiki.mises.org, a site that describes itself as follows: “The Mises Institute is the world’s largest, oldest, and most influential educational institution devoted to promoting Austrian economics, freedom, and peace in the tradition of classical liberalism. Since 1982, the Mises Institute has provided both scholars and laymen with resources to broaden their understanding of the economic school of thought known as Austrian economics. This school is most closely associated with our namesake, economist Ludwig von Mises. We are the worldwide epicenter of the Austrian movement”. This is not a ‘conspiracy’-based website; indeed, it is highly credible and details economic views from various credible sources. The research conducted in this section is fully corroborated at the site, and dismissing the subject of enquiry as a conspiracy is not academically or logically viable.]

2.10 Conclusion of Chapter 2

In Chapter 2 I have identified and described several industries that fuel aspects of the ecological crisis. I have shown that various human activities and industries have been highlighted directly by numerous sources as responsible for massive ecological deterioration. Accelerated rates of deterioration have been shown to have occurred alongside the expansion of specific human industries. Six of the eight industries identified and described for their heavily detrimental ecological impact are subsidiaries of the fossil-fuel system. The seventh is the 'bio-tech' industry, the eighth the fractional reserve monetary system.

All of these industries focused on in this chapter have been shown to have something *inherently* problematic about them in light of the ecological precariousness revealed in Chapter 1, which is to say that their ecological shortcomings are not momentary accidents or inefficiencies waiting to become ‘corrected’; rather, the shortcomings have been shown to be structural underpinnings of the industries, and therefore of the ecological crisis.

The following from Jared Diamond (2005:498) is well contextualised considering the information and themes explored in this chapter, as well as in Chapter 1:

Our world society is presently on a non-sustainable course, and any [one] of our... problems of non-sustainability... would suffice to limit our lifestyle within the next several decades. They are like time bombs with fuses of less than 50 years. For example, destruction of accessible lowland tropical rainforest outside national parks is already virtually complete in Peninsular Malaysia, will be complete at current rates within less than a decade in the Solomon Islands, the Philippines, on Sumatra, and on Sulawesi, and will be complete around the world except perhaps for parts of the Amazon Basin and Congo Basin within 25 years. At current rates, we shall have depleted or

262 <http://www.neweconomics.org/pages/what-we-do> accessed 15 August 2014

263 <http://www.neweconomics.org/publications/entry/where-does-money-come-from>

destroyed most of the world's remaining marine fisheries, depleted clean or cheap or readily accessible reserves of oil and natural gas, and approached the photosynthetic ceiling within a few decades. Global warming is projected to have reached a degree Centigrade or more, and a substantial fraction of the world's wild animal and plant species are projected to be endangered or past the point of no return, within half a century. ...[A]ny of the dozen problems if unsolved would do us grave harm, and... they all interact with each other. If we solved... [all but one] of the problems, ...we would still be in trouble, whichever was the problem that remained unsolved. We have to solve them all.

I have shown that various industries that literally power contemporary society are directly responsible for the non-sustainable course on which Diamond comments. In Chapter 3 I will turn attention toward the non-physical, 'attitudinal' factors that drive and 'justify' the industries that cause such unrelenting ecological destruction.

Chapter 3:

What are the attitudinal causes of the ecological crisis?

3.1 Introduction to Chapter 3

White (1971:11), in his essay 'Historical roots of our ecological crisis', makes an observation that is important to keep in mind while considering the information in this chapter: "What people do about their ecology depends on what they think about themselves in relation to the things around them". Due to their historical dominance, Christianity, Technology, Science and Capitalism²⁶⁴ are among the world's most influential, pervasive shapers of discourse²⁶⁵ – i.e. they have all played a part in shaping the way people 'think about themselves in relation to the things around them'. The word 'discourse' is used here to denote

a formalized way of thinking that can be manifested through language, a social boundary defining what can be said about a specific topic, or, as Judith Butler puts it, "the limits of acceptable speech" – or possible truth. Discourses are seen to affect our views on all things; it is not possible to avoid discourse.²⁶⁶

Indeed, it could be claimed these shapers of discourses²⁶⁷ have via their historical dominance played parts in shaping *the discursive foundation* upon which conceptual frameworks have been propagated. If this claim is true, it follows that it should be possible to trace 'themes' in the broad histories of these discourses that add context to the ecological precariousness uncovered in Chapter 1 and the 'industrial' recklessness exposed in Chapter 2. Hadot, White, and Kovel (to list the three main contributors to the material discussed in this chapter) all identify specific aspects and characteristics of the listed discourses as influential in precipitating the ecological crisis. This chapter identifies and traces the development of certain of these themes and characteristics of the listed discourses, themes such as:

- Dominion over nature.
- Anthropocentrism.
- Metaphysical dualism where humankind transcends nature in importance.
- Assumed judicial prerogative over nature.
- The seizing of control over nature via technology.
- Scientific reductionism.
- Nature being reduced to resources for humankind's benefit via technology.
- Nature as instrumentally valuable rather than inherently valuable.
- The technological view of nature as a 'standing reserve' of resources.
- The equating of progress with technological development.
- The scientific view that nature has a secret which 'man' takes it upon 'himself' to reveal.

264 I explain my reason for capitalising the first letter of these words in the 'Conventions' section at the start of this study.

265 It must be noted here that Democracy is a significant shaper of discourse as well; however, it features in the following chapter due to its relevance to the issue of 'what prevents social change?' and will not be addressed in this chapter.

266 <https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Discourse.html> accessed 23 December 2014

267 Christianity, Technology, Science and Capitalism

- The conceptualisation of nature as a machine.
- The scientific focus on things measurable and quantifiable.
- The machine as the model to explain nature.

The details of these (and other) themes and characteristics reveal something of the discursive journey towards the ecological crisis.

3.2 Christianity

In the introduction to this chapter, the following was quoted from White (1971:11): “What people do about their ecology depends on what they think about themselves in relation to the things around them”. Having said this, White goes on to identify and trace the Christian notion of dominion as relevant when broadly considering ecologically-insensitive human activities – some of his points will be explored below in this sub-section, as will the relevant work of various other thinkers. 'Dominion' as per White's use of the word means “the idea of man's limitless rule of creation” (1971:17), and as will be seen below, this idea of dominion prevailed as the dominant attitude to the relationship between humans and nature within Christianity. A brief caveat, however, is important here: to claim that the idea of dominion is dominant in Christianity is not to claim that it is necessary. At the conclusion of his essay, White (Ibid) offers such a caveat when he points out that Francis of Assisi, a devout Christian, “proposed what he thought was an alternative Christian view of nature and man's relation to it”, namely, “the idea of equality of all creatures”. St Francis' view is one more in harmony with the ecologically-sensitive ‘alternatives’ of Chapter 5, and it will indirectly be explored there. But as White says of St Francis and his alternative view, “He failed” (Ibid), and “the idea of man's limitless rule of creation” (Ibid) dominated instead.

White says of Christianity's victory over Paganism that it is “the greatest psychic revolution in the history of [Western] culture” (1971:11). He also states that many people “continue today to live, as [they] have lived for about 1700 years, very largely in the context of Christian axioms”. White substantiates these claims with reference to the Christian creation myth where man is given dominion over all animals. He describes the story as one where the main protagonist, God, planned creation “for man's benefit and rule: no item in the physical creation had any purpose save to serve man's purposes” (Ibid). Elaborating on White's point, that nature was supposedly created purely to serve humans, Irving and Priddle (1971:xii) confirm the cogency of his “claims that the roots of our crisis extend into the very heart of the Judeo-Christian tradition”. They concur that the dominant Christian discourse has been a disaster for ecology. They ask:

What better licence to chop down, tear up and otherwise modify his environment could Western man have than the text of his own holy book? Does the bible not specify that all the earth and everything that lives upon it has been put here for the sole use and enjoyment of man?

It is clearly not the case that “usage and enjoyment” *necessarily* equate to chopping down and tearing up (as the caveat in the opening to this sub-section suggests), but the Christian bible clearly states in Genesis 1 verse 28²⁶⁸ that God told people to be “fruitful and multiply and fill the earth and subdue it, and have dominion over the fish of the sea and over the birds of the

268 <http://biblehub.com/genesis/1-28.htm> accessed 23 February 2014

heavens and over every living thing that moves on the earth". Again, dominion does not necessarily give people license to destroy, so Irving and Priddle's quote may seem somewhat severe at this early stage of the analysis. What is certain is that the theme of dominion is firmly established in the Christian bible; and as it will be seen below in this sub-section, as well as in all the sections that follow in this chapter, the historical prominence of this theme cannot be downplayed considering the facts of the ecological crisis outlined in Chapters 1 and 2.

One important consequence of the historical prominence of the theme of dominion is the metaphysically dualistic stance where humans transcend nature – and as it will be seen, this characteristic is common to all of the shapers of discourse in this chapter. This characteristic is part of the essence of anthropocentrism: Kovel, in his *The Enemy of Nature* (2006:122), writes derisively of the "'anthropocentric' delusion that sees nature, in all its intricate glory, existing like so many planets around the human sun", a poetic way of describing a view in which humans are prioritised above all else. Arne Naess (2005:186) echoes Kovel's tone in *The arrogance of antihumanism* when he associates anthropocentrism with "an image of man as an immature being with crude, narrow, shortsighted interests". Christianity is not explicitly anthropocentric – its central focus on an 'almighty' God classifies it instead as a theocentric religion. However, White (1971:12) situates Christianity in a context where it is impossible to avoid the association of the religion with anthropocentric views. He says that human beings share "God's transcendence of nature" and that Christianity "not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends". God retains central theological importance, but humankind has via this global religion been given holy mandate to decide how to treat nature (and as shown in Chapters 1 and 2, this treatment has been tantamount to the torture²⁶⁹ of nature). Pierre Hadot agrees. In *The Veil of Isis* (2008) he isolates the metaphysical dualism of Christianity as prominent in the suppression of nature, though he does not explicitly state the word 'dualism'. Hadot spends the first quarter of the book analysing the various historical contexts in which Heraclitus' aphorism, 'nature loves to hide,' can be understood; he eventually identifies (2008:92-94) a cognitive approach (only one of several hermeneutic possibilities) where the aphorism is taken to suggest that nature has a secret which human beings can and should discover (especially via the 'mechanistic' view of nature, which will be shown to have grown out of the same ideological stance of 'dominion over nature' that spread with the Catholic church's mandate of Christianity during the Middle ages – more on this in the following sub-sections of this chapter). Hadot names the approach whereby humankind takes it upon itself to unveil nature's secrets the "judicial" model. He writes:

Indeed, this judicial model supposes that human reason ultimately has a discretionary power, which would, moreover, be confirmed by biblical revelation, since the God of Genesis speaks these words after the creation of Adam and Eve: "Grow and multiply, and fill the earth, and dominate it. Command the fish of the sea, and the birds of the air, and all the beasts that move upon the earth".

With such 'discretionary power' assumed by Christians to be validated by God via bible stories that advocate the judicial model, it is unsurprising that critical parts of the history of Christianity are

269 As I show later in this Chapter, Francis Bacon (a Christian and a Scientist) spoke favourably of the torture of nature.

characterised by oppressive activities: J. Denny Weaver²⁷⁰ lists as examples “the crusades, the multiple blessings of wars, warrior popes, support for capital punishment, corporal punishment under the guise of 'spare the rod and spoil the child,' justifications of slavery, world-wide colonialism in the name of conversion to Christianity, the systemic violence of women subjected to men, and more”. Granted, other human beings were the explicit focus of such oppression for the Church, but it follows that part of the effect of its undeniable reign and associated far-reaching discursive consequences was the deep entrenchment of the dualistic, dominion-focused stance referred to above. Such a dualistic position is not exclusive to the Christian church; it is well known that Plato, for example, had established a dualistic system centuries prior to Christianity, but as will be seen immediately below, the closest the Ancient Greeks got to 'dominion' was in what Hadot (2008: 101-106) refers to as the field of 'mechanics', developing in the third and second centuries BCE. Plato's [Pythagorean] idealist dualism of body [subject to becoming] and soul or *psyche* [being], which contrasted, in turn, with the ancient Greek conception of cyclical nature as *physis*, was notably different from the modern dualism of Descartes. Descartes successfully articulated 'modern' ontology in dualistic terms (mind and matter), in this way setting nature up as non-human domain that was the legitimate field of Scientific investigation and technical mastery. This happened *after* the Church had reigned officially for over a thousand years, time enough for its ideologies to spread widely all over the world, so it is fitting that Descartes – a devout Christian – formulated his dualism so definitively near the climax of the Christian stronghold on discourse in general.

One event in particular played an important role in establishing an ostensibly irrefutable link between nature and death during the latter parts of the explicit reign of the church: the Black Death, which is well-known to have wiped out a third to half of Europe's population. Theologian Thomas Berry, in *The Dream of the Earth* (1988:125), explains that in

response to the plague and other social disturbances of the fourteenth and fifteenth centuries, two directions of development can be identified – one towards a religious redemption out of the tragic world, the other toward a greater control of the physical to escape its pain and increase its utility to human society. From these two tendencies the two dominant cultural communities of recent centuries were formed: the believing religious community, and the secular community with its new scientific knowledge and its industrial powers of exploiting the natural world.

Berry's points confirm that the ideological impact of the reign of the church was widespread, considering that he identifies only two “directions of development” (Ibid), one Christian, the other Scientific, Technological and industrial (the latter of which is explored in detail in the sub-sections to follow). Considerable evidence has been provided in this sub-section to show that Christianity, at least, laid the groundwork for the kind of dualism that is associated with Descartes, where a definitive split between humankind and the natural world cannot be ignored. As has also been shown, White and Hadot posit Christianity as responsible for a widespread focus on dominion over the natural world. These characteristics – dominion and metaphysical dualism – therefore can be historically associated with Christianity, which remains the world's most influential religion. Considering what has been discussed respectively in this sub-section, in Chapter 1 about the ecological crisis, and in Chapter 2 about diabolical anti-ecological activity, White's comment (1971:11) – “What people do about their ecology depends on what they think about themselves in relation to the things around them” – provides the impetus to identify dominion, anthropocentrism,

270 <http://www.crosscurrents.org/weaver0701.htm> accessed 4 January 2015

metaphysical dualism, and assumed judicial prerogative over nature as characteristics of discourse that are relevant in any consideration of anti-ecological activity. The sections below add further information and context for such a consideration and continue to identify anti-ecological features of discourse.

3.3 Technology²⁷¹

Hadot (2008:10–106) offers a detailed history of the development of 'mechanics', the predecessor of what would contemporaneously be called Technology, from antiquity to the Modern period; he concludes the section (2008:106) on this history by stating the following: “The Renaissance and Modern times, taking up [the] atomistic hypothesis..., were to place it in the service of the other tradition, that of the mechanical techniques of the engineers of antiquity”. For now, suffice it to say that the 'atomistic hypothesis' (which is a topic under more thorough scrutiny in the following sub-section on Science) was not Scientifically reductionist in the context of Democritus and Epicurus; as Hadot (Ibid) says of the Epicurean context, the 'atomistic hypothesis' was “intended above all not to explain the world but to appease souls”. This is not the reductionist flavour of Modern Science, nor does it thematically concur with the atomistic hypothesis of Modern Science; instead, 'atomism' in the 'mechanical' sense of Modern Science can be understood as the persistent compartmentalisation and categorisation of 'objects' into smaller and smaller parts, increasingly detached from a synergistic totality, as suggested by Vetlesen (2012:26): At ever-increasing pace, we have confined what used to be nature into small parcels”. Indeed, this is discursive reductionism. Vetlesen points out (Ibid) an important consequence to such a process: “Instead of fearing being overtaken by nature, technology in our era has enabled us to seize control over nature to an extent unimaginable to our forefathers. Hence Yupik Eskimos (and other indigenous people) with incredulity and apprehension refer to us Westerners as ‘the people who change nature’”. Here, Technology is explicitly linked with a process wherein nature is ‘reduced’, in the reductionist sense, in such a way as to fragment it and dissect it into smaller parts; these parts, detached from the whole, become ‘resources’, and in accessing them, the totality, ‘nature’, is changed. Heidegger (1977:14-17), in his analysis of Technology, says that nature is thus reduced to a ‘standing-reserve’ of resources. More will be said about Heidegger's analysis of Technology later on in this sub-section, but suffice it to quote Olivier (2005)²⁷² for now, who after a brief outline of Heidegger's analysis of Technology comments that “nature has become no more than a resource for human consumption, leading to its inevitable degradation”.

It is clear that Hadot (2008:102-103) agrees with the above analysis of Western Technology as reductionist and inherently exploitative of nature when he offers some very specific information about the ideological potential of ‘mechanical’ techniques arising in the third or second century BCE out of the atomistic hypothesis. He comments on an extract of a text called *Problemata mechanica*, which is taken to be representative of the then-emerging mechanical views:

271 As I explain in the 'Conventions' section of this study (an explanation worth noting here), I distinguish between Technology as it has historically ‘developed’ versus technology in its idealised form by capitalising the former but not the latter – see my reference to Speth in the Conventions section. In practice this method of distinguishing between the two is not always a straightforward matter, and I request that ‘grey areas’ are tolerated regarding the use of uppercase and lowercase first letters for the use of the word technology, as well as the other shapers of discourse on which I focus in this study.

272 See Olivier's essays: 'Nature, capitalism, and the future of humankind' (2005) and 'The humanities, technology, and universities' (2008).

First, mechanics is situated within the perspective of a struggle between man and nature. ... Technology allows us to regain the upper hand over nature. Next, the goal of mechanics is to serve mankind's practical interests, and therefore to relieve human suffering, but also, it must be admitted, to satisfy the passions, particularly those of kings and the wealthy: hatred, pride, and the taste for pleasure and luxury. Moreover, mechanics is a technique that consists of tricking nature, by means of instruments fashioned by human beings: machines of all kinds that enable the production of effects apparently contrary to nature. ... Finally, mechanics is closely linked to mathematics, which allows one to determine how to produce a given effect.

It follows that mechanics and Technology paved the way for modern, anthropocentric views, because what is described as emerging in the third or second century is very familiar as a general standard of the widespread use of mechanics and Technology – which is not to say that it is *exclusively* the way mechanisation and technology are used, but in this sub-section Technology will increasingly be shown to be something discursively predicated by the motive “to regain the upper hand over nature” (Ibid), with devastating consequences for nature. The industries discussed in Chapter 2, which perpetuate the ecological problems focused on in Chapter 1, “serve mankind's practical interests” (Ibid), *via Technological procedures*. To illustrate: topsoil, water and biodiversity (examples of ‘nature’) are affected heavily by the Technological ‘feats’ of the fossil-fuel industry that literally powers industrial ‘civilisation’. Natural climate cycles are destabilised by the megalithic amounts of greenhouse gases emitted by the Technologies of the fossil-fuel industry and the petrochemical industries for the sake of human commerce, transport, entertainment, etc. The GMO industry prescribes that agricultural Technological practices involve the spraying of petrochemical pesticides and herbicides to eliminate life forms that have not been genetically modified to resist the pesticides and herbicides for the sake of human food production. All of these practices weaken biodiversity, the key for *all* life. Hadot speaks of “tricking nature” (Ibid); genetically modifying organisms is surely a step beyond tricking nature into the territory of ‘changing nature’. These and other ecological issues outlined in Chapter 1, and the systemic industrial practices described in Chapter 2 that perpetuate the crisis, are well-contextualised when considering the anthropocentric foundation upon which ‘mechanics’ was born, and which in turn would reinforce the reductionist, anthropocentric, and instrumentalist foundation upon which Technology has expanded.

Having just referred to genetically modified organisms and thereby invoking agriculture, it is fitting to incorporate another important historical event that grew out of the ‘mechanical’ views emerging between three hundred BCE and six hundred CE: an agricultural revolution, namely the change to the mouldboard plough. White (1971:11) identifies this change as significant in early agricultural Technology in Northern Europe, and in a sense it marks the beginning of an approach to agriculture that has continued until contemporary times, albeit in an exponentially environmentally-damaging manner. According to White, the plough changed from a ‘scratch-plough’ to ‘mouldboard’ plough in the sixth century CE. The former agricultural tool facilitated subsistence farming; the latter, as Whites remarks, “attacked”²⁷³ the fields. The plough not only slices into the earth as a scratch plough does, but runs a horizontal share under the sod to sever a thick layer of it, which is then turned over by the mouldboard. White notes that this change in agricultural Technology appears concurrently with representations in calendars of the seventh century CE where men are depicted for the first time “coercing the world around them” (Ibid). This approach to agriculture is violently anthropocentric; it serves the purposes of advancing humankind with disregard for the ecological consequences of actions, hence White's distinction between what was initially subsistence farming

²⁷³ Heidegger also uses similar language to describe Technology's application to nature (1977:14-17). It is, however, unclear whether White read Heidegger.

(scratch-plough) and later 'aggressive' agriculture (mouldboard-plough). White (Ibid) makes an important observation in the following rhetorical question with regard to this Technological event: "Is it coincidence that modern technology, with its ruthlessness toward nature, has so largely been produced by descendants of these peasants of Northern Europe?". This hostile agricultural/Technological approach must also be understood as coterminous with Christian discourse as explored in the above sub-section of this chapter. In that section it was shown that Christianity has historical roots where human beings are given divine mandate to practise dominion over the natural world. The agricultural approach also begins to occur a few centuries after Constantine's initiation of the gruesome prosecution of all manners of lifestyles that were not endorsed by the Catholic Church. Constantine declared Christianity the official religion of the Roman Empire in the fourth Century CE, starting an empire-long persecution of non-Christians. This of course meant eliminating diversity of lifestyle and 'universalising' Christian views and practices – the offer of 'accept Christianity or die a miserable death'²⁷⁴ clearly helped to achieve this outcome. It should be remembered that, to speak generally, the explicit reign of the church *dominated* discursively until well after the Reformation; a 'decentralisation' of sorts occurred with the onset of the Renaissance, but the Christian imperative to dominate nature had become widely entrenched and, as it will be seen below, continued to be fed in the programme of Science (to comment briefly here: Science was to be characterised by nascent reductionism, largely associated with quantitative Science born from the cradle of antiquity's 'mechanics', ideologically overlapping with the dominion-imperative of Christianity).

The mouldboard plough is an example of Technology 'developing' according to the concepts of 'subjective reason' and 'instrumental reason', a central topic of Horkheimer's text, *The Eclipse of Reason* (1947). He says that subjective reason

is essentially concerned with means and ends, with the adequacy of procedures for purposes more or less taken for granted and supposedly self-explanatory. It attaches little importance to the question whether the purposes as such are reasonable. If it concerns itself at all with ends, it takes for granted that they too are reasonable in the subjective sense, i.e. that they serve the subject's interest in relation to self-preservation. ... The idea that the aim can be reasonable for its own sake – on the basis of virtues that insight reveals it to have in itself – without reference to some kind of subjective gain or advantage, is utterly alien to subjective reason.

So in the example of the mouldboard plough, the purpose of increased agricultural output (a.k.a. more food, convenient for self-preservation) is taken as a self-evidently worthwhile outcome *despite* the plough ripping the land to shreds and thereby condemning it to perpetual farming (industrial GM agriculture adds to this condemnation perpetual applications of chemicals and poisons); that the land prior to human demand on it could be *inherently* valuable is not discursively incorporated. Horkheimer (1947:21) later uses the term 'instrumental reason' to denote a way of viewing the world that is on par with subjective reason:

Having given up autonomy, reason has become an instrument. In the formalistic aspect of subjective reason, stressed by positivism, its unrelatedness to objective content is emphasised; in its instrumental aspect, stressed by pragmatism, its surrender to heteronomous contents is emphasised. Reason has become completely harnessed to the social process. Its operational value, its role in the domination of men and nature, has been made the sole criterion.

²⁷⁴ See the following source for an example of the gruesome prosecution of the Cathars, Albigensians, and Bogomils by Christians:
<http://www.iranicaonline.org/articles/cathars-albigensians-and-bogomils> accessed 22 May 2017.

Horkheimer (1947:4) distinguishes between this kind of Reason²⁷⁵ and objective reason, the latter holding that the “degree of reasonableness of a man's life could be determined according to its harmony with [its] totality. Its objective structure, and not just man and his purposes, was to be the measuring rod for individual thoughts and actions”. Clearly, the mouldboard plough, with its 'violent' agricultural interaction, is welcomed in the subjective schemata of 'Reason' because it is all to do with “man and his purposes”, which in the context of this plough is clearly focused on dominion and not 'harmony with the totality' of things. Indeed, this distinction can be seen as summative of Horkheimer's project in the *Eclipse of Reason*: as the title suggests, reason in its 'objective' sense, i.e. with its 'focus on methods and their relation to totalities', gets *eclipsed* historically by Reason in its 'subjectivist' and 'instrumental' sense, the latter of which is further explained by Horkheimer (1947:6) in the following: “In the subjectivist view, when 'reason' is used to connote a thing or an idea rather than an act, it refers exclusively to the relation of such an object or concept to a purpose, not to the object or concept itself. It means that the thing or the idea is good for something else”. The mouldboard plough is clearly an instrument, 'good for something else'. Much later in the text, Horkheimer (1944:101) makes a crucial point that is most relevant to this discursive analysis of Technology – “On the one hand, nature has been stripped of all intrinsic value or meaning. On the other, man has been stripped of all aims except self-preservation. He tries to transform everything within reach into a means to that end”. Vetlesen (2012:32) uses the term 'deictic' synonymously with Horkheimer's 'objective reason' and singles out Technology as instrumental in the loss of focus on 'matters of ultimate concern':

...technology's enormous potential for offering us relief (disburdening) from the care of things is commonly seen as liberation from toil. That this much-celebrated progress is bought at a heavy price is what deictic discourse in the sense intended is meant to help us recognise. Deictic discourse allows us to be guided by focal things, matters of ultimate concern that are other and greater than ourselves. Such a discourse cannot, and does not aspire to control its subject matter.

Based on the above exposé of the 'development' and use of Technology, already, it is clear that in its actual historical 'unfolding' (i.e. in its dominant subjective form, versus its objective form) it has been put to use 'to control its subject matter' – the dominant and dominating industries explored in Chapter 2 are all clear instances of 'success' in 'achieving' such a goal, and in light of what has been so far (and which will increasingly be seen) in this sub-section, the ecological destruction (see Chapter 1) caused by the industries is unsurprising. It follows therefore that the widespread use of Technology occurs without sight of 'matters of ultimate concern' (Ibid), an example of which is preventing ecocide.

Fast forwarding now away from the sixth and seventh centuries: through the Middle Ages, past the Renaissance, and into the Modern period. All that has been said about the mouldboard plough is applicable to what happens in this period as far as Technology is concerned. Science develops along mechanistic lines²⁷⁶, which will be discussed in the next sub-section in this chapter, but suffice it for now to point out that the “pragmatic attitude” (Horkheimer 1944:104) of subjective/instrumental Reason sparks new Technological inventions with the help of mechanistic Science, inventions that

275 I capitalise this word now to identify it in its historical, instrumental, 'institutionalised' sense, rather than in its idealised form – see the conventions section of this study for my distinction between the two.

276 Whereas the invention of the mouldboard plough occurred in what was still a largely theocentric, teleologically oriented period; see Heidegger: 'The Age of the Worldview', in *The Question concerning Technology and Other Essays* (1977).

reinforce such Rationality discursively. Examples of such Technological feats are offered by Hadot: navigational Technology and printing (2010:123), and the telescope and the microscope (2010:129); the first two examples extend the developmental speed and reach of the kind of perceptual frameworks under the spotlight here, while the second two home in on the 'laws' that are so important in the perceptual framework, laws that become utilised to extend the increasing speed and reach of the perceptual frameworks. As Horkheimer (1947:104) says of such pragmatism, "Modern insensitivity to nature is indeed only a variation of the pragmatic attitude that is typical of Western civilization as a whole". But there is a clear historical moment when Technology, now associated with 'subjective Reason', is given the chance to be unleashed into the world; Hadot (2008:137) makes this clear: "It was not until the beginning of the nineteenth century, from the time when production began to be industrialised and the flourishing of technology became universal, that man's relation to nature was gradually modified in depth". It is well known that around this time steam technology was employed initially in the project of industrial production – and this is a telling example of how Horkheimer's distinction between means and ends works: the means of industrial Technology justifies the end, i.e. a fully Technologized world, without a view of the 'totality' (nature included, and exploited labourers, etc.). Heidegger (1977:4;19-20) expresses this process in terms of what he calls Enframing: "Enframing means the gathering together of that setting-upon which sets upon man, i.e., challenges him forth, to reveal the real, in the mode of ordering, as standing reserve. Enframing means that way of revealing which holds sway in the essence of modern technology and which is itself nothing technological". Olivier (2008), in his essay 'The humanities, technology, and universities', offers a useful description of how the technological Enframing works:

[T]echnology, or rather, its 'essence' as 'Enframing', is a pervasive, inescapable ontological 'framework' which operates tacitly and implicitly as unquestioned assumption whenever questions are asked, or problems approached, concerning politics, society, economics, nature, and just about anything which could possibly be a topic of conversation. No institution escapes being positioned in this framework of organisation and evaluation underpinning humanity's current manner of experiencing the real[.]

Olivier continues:

What does Heidegger mean by saying the essence of technology is 'Enframing'? For him, this manifests itself as a mode of being or 'openness' where everything is seen as being fit to be 'ordered' or 'set upon', or as something that presents itself as a 'standing reserve', according to which things and energy, including human beings, can be used or 'stored' as 'resources' for use[.]

It was in 1859 that this approach of subjective Reasoning, as well as the intricate process of Technological Enframing, were to be provided with a fuel source (literally) that could accelerate the global spread of Technology: the discovery of oil. Hartmann (1999:16), in his text, *The last hours of ancient sunlight*, details the history of the discovery and use of oil. He says that it was already widely in use around 1850 in Romania, but that the "real boom" began in 1859 "when oil was discovered in Titusville, Pennsylvania, in the United States". It is telling, and based on the above analysis, unsurprising, that the outcomes of the purposes served by oil Technology were immediately exclusively anthropocentric: as explained by Hartmann, by "using this ancient sunlight locked up with carbon as a heating source and energy source, and by using it to replace farm animals with tractors, our ancestors increased dramatically their ability to produce food". Hartmann also makes the crucial link between the use of oil and the massive expansion of the human population: just before the widespread use of oil, the human population numbered around 1 billion people; just over

a century later, in 1960, the number was 3 billion (1999:17) – this three-fold expansion of the human race makes sense not because oil was discovered, but rather because it was discovered in a context where people were discursively conditioned by what Horkheimer referred to as subjective/instrumental Reason, and where the process of what Heidegger calls the (Technological) Enframing was well under way. And as Hartmann says, “we didn't stop there”, which is something of an understatement considering the 2014 human population of over 7 billion people. Clearly, what happened with the mouldboard plough is different to what happened with the discovery and use of oil only in scale: the anthropocentric 'Rationality' that facilitated their discovery are the same; the anthropocentric 'means' are the same; as are the anthropocentric 'ends'; oil Technology simply unleashes such subjectivist-dominant anthropocentrism at exponentially increased rates. Furthermore, oil quickly became entrenched as the fuel source that powers the 'development' and spread of Technology; in a sense, global Technology *is* 'oil Technology' thanks to globalisation, as implied in the gradual spread of oil and its uses since its discovery via Modern imperial endeavours. Considering the global ubiquity of such oil Technology, Hadot's following sentiments (2008:151) need no explanation, especially in the light of what was explored in Chapters 1 and 2 about the ecological crisis and their industrial causes, and in light of the discursive 'dominion over nature' so far associated with Christianity and Technology:

[W]e must admit that mankind, far from having mastered ['his'] situation, finds himself, on the contrary, faced with still more serious dangers. Technology is engendering a way of life and ways of thinking that have as their consequence the ever-increasing mechanisation of human beings themselves. It is impossible, however, to stop the implacable progress of this kind of civilization. In the process, mankind risks losing its soul as well as its body.

Hadot's sentiments remind one, indirectly, that 'progress' has roughly been equated with Technological development²⁷⁷ – Hoyer, K.G., and Naess, P. (2012:213), in an essay called *From ecophilosophy to degrowth*, with reference to the work of von Wright, refer to “...myths of progress based on technological development and bureaucratic-paternalistic kinds of social engineering”. Furthermore, Vetlesen (2012:41) alludes to the “belief shared by the political and economic elite that technology is what will save us”, presumably from the ecological disasters created by humankind under guidance of the 'political and economic elite'. But as Vetlesen points out, such a belief – that Technology will save us –

appears shockingly naïve. Technology is as much and as deeply part of our current problems as part of their solution. Advances in technology, Jared Diamond reminds us, “just increase our ability to do things, which may be either for the better or for the worse. All of our current problems are unintended negative consequences of our existing technology.” To speak of “all” in this way may be putting it too strongly; it risks simplifying the causes of our predicament, and it seemingly subscribes to technological determinism. Diamond's main point, however, is well taken: there is no reason to think that, at a certain point in our development (say, right now), new technology will cease to cause new (unintended, unforeseeable) problems, that its only impact on problems will consist in making them disappear.

Vetlesen's reference to Diamond's 'reminder' is fitting. Diamond not only points out the historical 'instrumentality' guiding human beings' development and use of Technology; he also draws attention (2005:505) to the fact that Technological 'solutions' “to environmental problems are routinely far more expensive than preventive measures to avoid creating the problem in the first

277 See Olivier's Thoughtleader article 'Has humankind really "progressed", in the Enlightenment sense of the word?'

(<http://thoughtleader.co.za/bertolivier/2017/02/19/has-humankind-really-progressed-in-the-enlightenment-sense-of-the-word/> accessed 5 March 2017)

place: for example, the billions of dollars of damages and cleanup costs associated with major oil spills, compared to the modest cost of safety measures effective at minimizing the risks of a major oil spill". Furthermore, Oreskes and Conway (2010:83), in the book *Merchants of Doubt*, indirectly comment on the 'argument' that Technology 'will save us' by way of reference to the sentiments of the controversial Fred Singer. Despite the controversy surrounding the man and his influence (see Oreskes and Conway, 2010:91-95), the following is very relevant, where the comment by the uncontroversial scientist Garrett Hardin 'grounds' the observations made:

Singer cited the famous essay "The Tragedy of the Commons," in which biologist Garrett Hardin argued that individuals acting in their rational self-interest may undermine the common good, and warned against assuming that technology would save us from ourselves. "If we ignore the present warning signs and wait for an ecological disaster to strike, it will probably be too late," Singer noted. He imagined what it must have been like to be Noah, surrounded by "complacent compatriots," saying, "'Don't worry about the rising waters, Noah; our advanced technology will surely discover a substitute for breathing.' If it was wisdom that enabled Noah to believe in the 'never-yet-happened,' we could use some of that wisdom now," Singer concluded.

The link to Garret's essay is a valuable one, especially in the context of the errant view that Technology will 'save us'. Garret's focus is on the human population problem, but his following comment is relevant to the ecological crisis in general, as well as the individual 'ecological indicators' (see Chapter 1) that constitute the ecological crisis:

The class of "No technical solution problems" has members. My thesis is that the "population problem," as conventionally conceived, is a member of this class. How it is conventionally conceived needs some comment. It is fair to say that most people who anguish over the population problem are trying to find a way to avoid the evils of overpopulation without relinquishing any of the privileges they now enjoy. They think that farming the seas or developing new strains of wheat will solve the problem – technologically. I try to show here that the solution they seek cannot be found.

The logic evident in the extract is simple – the instrumental use of Technologies that enable members of humankind to 'farm the seas' or 'develop new strains of wheat' is a use of Technology indistinguishable from that which created the population problem in the first place! One could say that the problem occurred due to Technological Enframing, and that Technological Enframing is employed in a (futile) attempt to solve the problem; or that Technology in its instrumental and subjective sense created the problem, and that Technology in its instrumental and subjective sense is employed in a (futile) attempt to solve the problem.

It is necessary to finish this sub-section with a brief side-note, a caveat similar to the one found in the sub-section on Christianity: there is no claim here that the discourse under scrutiny – technology this time – is one that *must necessarily* advocate the kinds of ecologically-insensitive ideological themes that came to the forefront above. This is acknowledged by Vetlesen who, in an essay called *Technology, nature and ethics* (2012), refers to an observation of Borgmann's and thereby justifies a 'generalised' approach:

As Borgmann succinctly observes, a case-by-case appraisal of technology is inconclusive at best and grossly misleading at worst. There will always be cases where a new device or method is unobjectionable and truly helpful to address genuine human needs; ...It is when we attempt to take the measure of technological life in its normal totality that we are distressed by its shallowness, not to mention frightened by its powers of destruction.

This 'normal totality' was the focus of this sub-section.

3.4 Science

In *The veil of Isis* (2008), Hadot spends nearly the first quarter of the book exploring the different ways of understanding Heraclitus' aphorism, 'nature loves to hide'; the aphorism is shown by Hadot to have special relevance in the development of various cognitive approaches to the external world. From the detailed exploration of the complicated hermeneutical variations of the phrase, Hadot (2008:92) makes a distinction that is crucial to consider for the present focus on Science and indeed for the focus of this entire chapter:

Several models of investigation were available for the ancient [Greek] philosophers and scientists. The choice between these models was guided by the way the relations between men and nature were represented, that is, between nature and human activity; it was also oriented by the way the image of 'the secrets of nature' was perceived. If man feels nature to be an enemy, hostile and jealous, which resists him by hiding its secrets, there will then be opposition between nature and art, based on human reason and will. Man will seek, through technology, to affirm his power, domination, and rights over nature.

Hadot (2008:92-94) goes on to point out that if 'man' takes the view of nature as enemy, the approach will be "judicial" (as commented on in the sub-section on Christianity) in the sense that nature is put on trial by means of the 'investigations' (think 'Scientific experiments') undertaken into it. Particularly compelling evidence for this claim is offered by Hadot in the form of various quotes, one of which is from Hippocrates in the fifth century BCE (2008:93): "When Nature refuses to hand over the signs [i.e. clinical symptoms], art has found the constraining means by which Nature, violated without damage, can let go of them". It is well known that the distinctions common 'today' between different disciplines such as art and Science did not exist until relatively late in Western history, so when Hippocrates mentions "art", a diverse array of theoretical and practical elements is denoted within which the precursors to a plethora of other familiar discourses can be glimpsed. Very early cognitive precursors to 'Modern' Science can be seen in the quoted sentiments of Hippocrates in the sense that Scientific experimentation is tantamount to 'putting nature on trial', to refer back to Hadot. Two millennia later, the then epitome of the 'man of Science', Francis Bacon (also quoted by Hadot) stated that the "secrets of nature are better revealed under the torture of experiments than when they follow their natural course" (Ibid), which definitively substantiates Hadot's identification of Science as having developed out of the hostile view ('nature as enemy'), or better, the view that nature has a secret which 'man' takes it upon 'himself' to reveal (versus the view of being initiated into philosophically complex *symbiotic* processes, the unfolding of which is the secret of nature, and which is 'irreducible' in an epistemological sense but 'to be lived' in an ontological sense – more on this in later chapters).

Hadot (2008:95-98) calls the inherently hostile view "Promethean", borrowing the name from the mythical Greek figure who stole *the secret* of fire from the Gods, a deed that in the context detailed by Hadot symbolises the 'unveiling' of nature in the sense of judiciously interrogating 'it'; this is indeed one of the primary symbols of Hadot's book: the unveiling of Isis, the pre-dynastic Egyptian figure that shares some contemporary similarities with 'mother nature'. Hadot writes of Promethean 'man' – and this is crucial for the purposes of this study – that he "demands the right of dominion

over nature” (2008:95) and furthermore that the attitude “has engendered our modern civilization and the worldwide expansion of science and industry” (2008:101). 'Dominion' was encountered in the context of Christianity, and from what was explored about it there, it follows that Christianity also has strong Promethean aspects; hence the *crucial* identification at this point of this study that *the ecological crisis must be considered in light of Promethean attitudes*. Science plays a major part in empowering the industrial expansionary process – according to Hadot (Ibid), Science emerged at the end of the Middle ages in its experimental form (think 'judicial', interrogative; as above) that is so representative of the attitude, and its character was by that stage in history already heavily predisposed towards the Promethean due to the discursive reign of the Catholic Church (their message was partly that of human 'dominion' over nature, a view which enabled the Church literally to profit from its exploits) and the spread of the views associated with 'mechanics' (as per the above sub-section).

This is where the 'atomistic hypothesis' Hadot refers to in the above sub-section on Technology must again come into view for the purposes of the present focus on Science. When it was previously encountered in this chapter, it was shown to be emerging around two or three centuries BCE in the context of what was then called 'mechanics'. Mechanics has been shown to have aspects that align somewhat with the anthropocentric aspects of Christianity (also already discussed) – aspects such as dominion over nature and the mandate on the 'secrets' of knowledge and being. This resonance justifies the claim that Christianity and Technology have strong discursively Promethean aspects (in that technology 'borrowed' from mechanistic 'thought'); and indeed, it follows that Science, Christianity and Technology all share certain common Promethean characteristics that discursively 'justify' domination of nature and dominion over it. The 'atomistic hypothesis' is a case in point – keep in mind Hadot's commentary on its re-emergence at the dawn of the Modern conception of Science: “The Renaissance and Modern times, taking up [the] atomistic hypothesis..., were to place it in the service of the other tradition, that of the mechanical techniques of the engineers of antiquity”. It is well known that the atomistic view sees nature as constituted by small parts – atoms, of course, but atoms are symbolic of any view that reduces or compartmentalises epistemologically or ontologically. In the spirit of the Promethean approach to nature (which is not confined to any one historical epoch, but rather appears at various times during the past 2500 years, as explored by Hadot), *this atomised view of nature makes it possible to conceptualise nature as a machine*. Hadot (2008:122) quotes Robert Lenoble, who in 1644 wrote a letter in which he foresees a discursive consequence of the mechanistic ideas that were gaining popularity at the time: “The time is coming when, in a few years, Nature will fall from her rank of universal goddess to become – a disgrace that has never before been known – a machine”. Later in the extract of Lenoble's letter, he identifies a “precise date” for the event: 1632. This is when Galileo published the *Dialogues on the Two principal Systems of the World*; Lenoble comments that the mechanical line of thinking then arising

implies a new definition of knowledge, which is no longer contemplation but utilization²⁷⁸, and a new attitude of man in the face of Nature: he ceases to look at her as a child looks at his mother, taking her as a model; he wants to conquer her, and become her master and possessor.

Five years later in 1637, in the *Discourse on Method*, Descartes (1972:119) also uses these words, specifically *master and possessor*, saying that he looks forward to the time when the new Science

²⁷⁸ 'Utilisation' is completely compatible with the concepts of subjective Reason, instrumental Reason, and the Enframing, all explored in the previous sub-section, as well as various other concepts that will be identified in later Chapters of this study.

will render humans “masters and possessors of nature”. The 'new attitude', quintessentially Promethean, is clearly relevant in light of the direction that Science took after the era in which Lenoble and Descartes were writing. Hadot (2008:123) acknowledges that “we must be very prudent when we wish to define the mentality of an entire period”, but he cannot help but point out the following undeniable and crucially relevant Promethean aspect of the line of inquiry taken by pioneers of what is generally known as the Scientific enterprise:

What we must say, I think, is that with Francis Bacon, Descartes, Galileo, and Newton, a definitive break... may have taken place, and these scholars discovered the means of progressing in a decisive and definitive way in this project of dominating nature, limiting themselves to the rigorous analysis of what is measurable and quantifiable in sensible phenomena”.²⁷⁹

Things “measurable and quantifiable” – this is a fitting description of the focus of 'reductionist' Science, as well as the main focus of Technological inquiry in the twentieth and twenty-first centuries (the epoch when the human onslaught against nature was to reach ecologically-disastrous heights). One needs merely to think of the endless data- and measurement-collection that defines so much of what is called Science contemporaneously, and the fact that such activities are dominantly *utilised* (a word deliberately used to remind one of Lenoble's remarks above) to achieve one of the Promethean goals encountered in above sections: the goal of 'enhancing' humankind above all else, albeit in a reductionist sense of 'enhancement'²⁸⁰. This is why, referring to the sentiments of Carolyn Marchant, Hadot (2008:121–122) says the following: “As Merchant rightly emphasizes, Francis Bacon's program is a program for the manipulation of the environment and of nature itself, precisely the one that our current period is trying to realise, in a way that risks bringing about the disastrous consequences not just for nature but for mankind”.

Having just referred to Francis Bacon as representative of Promethean mechanistic Scientific views that went on to 'define' so much of the Scientific programme, it is important to remember the theme of 'divine mandate' that has already been encountered in previous sub-sections in this chapter. Hadot (2008:93) quotes Bacon's imperative, “Let the human race recover its rights over nature, rights granted to it by divine munificence”, sentiments which show that the Scientific endeavour in its mechanistic, reductionist sense is an extension of discursive aspects of Christianity. 'Technology' as it is contemporaneously known, with discursive roots both in 'mechanics' (and hence Science, seeing as aspects of ancient Greek mechanics was borrowed from by pioneers of Modern Science) and the dominion-focused views of Christianity, is also implicated. All three areas of focus – Christianity, Science and Technology – therefore have Promethean conceptual overlaps that position them as primary ideological players in the history of the ecological crisis. The 'early' mechanistic aspects of seventeenth and eighteenth centuries' Scientific inquiry were indeed powerful reinforcers of Christian concepts in the sense that God's 'programme' of creating the world was compatibilised with humankind's nascent mechanistic Scientific enterprise:

Henceforth [i.e. after the seventeenth and eighteenth centuries] the machine, rather than the living organism, is the model that serves to conceive and explain nature, and from this perspective God appears as the builder of the world's machine, who is external to it: the great engineer, architect, or watchmaker. (Hadot 2008:127)

279 Several academics were already referred to in the previous section (about Technology) for their comments on the quantitative, reductionist flavour of Technology. Heidegger was one of these academics; another one of his essays can be referred to in this connection, 'The Age of the Worldview', where he traces the links between the representational aspect of philosophy, the calculative, quantifying aspect of Science and the controlling aspect of Technology.

280 This resonates with Heidegger's claim that Technology reduces nature and humans to mere 'resources for use', as discussed in the previous sub-section on Technology.

It follows that if God is external to nature and only created it, as one would create a machine, then humankind need not be concerned with whether or not their exploits of nature are ethically reprehensible – there is nothing in Christian mythology about the ethical implications of exploiting a machine. The Promethean Scientific attitude developing in the seventeenth and eighteenth centuries were therefore very similar to the Promethean attitude of dominion that heavily characterises Christianity; this is why Hadot (2008:130) writes, “Francis Bacon considered that the mission of science consisted in giving man the rights over nature that God had conceded to him”. It is easy to see that as time passed and the world became increasingly secularised (a topic beyond the scope of this study), the reign of religion diminished (though it certainly did not disappear) while mechanistic Science grew and influenced the 'progression' of human knowledge into its various Scientific categories, the vast majority of which continue to focus on the 'measurable and quantifiable' while the deteriorating ecological situation continues on its precipitous path. Continuing to speak generally (based on the investigation and analysis undertaken in this chapter so far), those areas of Science not focused exclusively on mapping the 'measurable and quantifiable' are instead categorised as applied Science, i.e. areas where Technology is 'developed' based on the calculations made available by reductionist Science; this kind of Technology pervades industry, which has been shown to be central in the ecological crisis.

Considering what has been said about Science and Technology above, there will no doubt be exceptions to the reductionist rule: permaculture, for example, is 'scientific', but is not reductionist or Promethean; it is discussed in Chapter 6, so it serves only as an example in this brief acknowledgement that a certain type of Science has been in the spotlight. Looking at the world as it was in the twentieth century and how it is in the early twenty-first century, however, the evidence for the domination of the Promethean character of Science is everywhere: the industries that pollute the world (Chapter 2) *are* applied Sciences, or better, Technologies birthed by applying the Sciences in a purely Promethean manner, stewed out of the dominion-focused theoretical foundations and justifications discussed in this chapter. And the Sciences that dominate in universities, for example, continue to focus exclusively on that which is 'measurable and quantifiable', making it completely unsurprising that the severity of the ecological crisis is only increasing despite more Scientific research being done on it – the research is generally conducted from the same reductionist Scientific platform that caused the problem in the first place, as hinted at by Hadot (2008:101) when he characterises the Promethean attitude as consisting of “the use of technical procedures to tear nature's 'secrets' from her in order to dominate and exploit her”, and states that the attitude “has had gigantic influence. It has engendered our modern civilization and the worldwide expansion of science and industry”. Keeping the character of these dominant Promethean shapers of discourse in mind, it is worth re-quoting White's remark (1971:11) from the beginning of this chapter: “What people do about their ecology depends on what they think about themselves in relation to the things around them”. It has been shown so far that Christianity, Technology and Science discursively predispose people to think and act in ecologically-problematic ways. In the next sub-section I show that globalised Capitalism systematically and systemically entrenches such problematic actions as ideological 'norms' in society.

3.5 Capitalism

The above three areas of focus, namely Christianity, Science and Technology, have been shown to embody and perpetuate discursive roots of the Promethean attitude towards nature. As pointed out at the end of the previous sub-section, Hadot (2008:101) summarises this attitude as consisting of “the use of technical procedures to tear nature's 'secrets' from her in order to dominate and exploit her”; he adds, as has been indicated above, that it “has had gigantic influence. It has engendered our modern civilization and the worldwide expansion of science and industry”. Hadot (2008:98) hints at another ingredient in the ideological Promethean pot: profit. He writes, “The blind development of technology and industrialisation, however, spurred on by the appetite for profit, places our relation to nature, and nature itself, in danger”. Some of the dangers, or rather consequences of the attitude are detailed in chapter 1 – the *ecological* consequences – as subsequently shown in the explicitly human expansion of ecologically-destructive industries of chapter 2 that serve human ends. An exploration of the 'appetite for profit' begins this exploration of a shaper of discourse that dominates and largely defines contemporary society, namely, Capitalism, an economic system that will be shown to combine various Promethean characteristics so far encountered.

Kovel (2002:39) reminds readers of his explicitly-titled book, *The enemy of nature: the end of Capitalism or the end of the world?* of something that is blatantly obvious about Capitalism: that Capitalist production is primarily for profit, versus use:

Those who do not know yet that capitalist production is for profit and not use can learn it right away from watching Wall Street discipline corporations that fail to measure up to standards of profitability. Capitalists celebrate the restless dynamism that these standards enforce, with its drive for innovation, efficiency and new markets.

Kovel continues his exposé by immediately outlining the difference between 'exchange-value' and use-value, the former being the central focus of capitalism in that 'exchange-value' is the area in which capital (profit) is accumulated; he writes (2002:39) that use-value

signifies the commodity's place in the ever-developing manifold of human needs and wants, while exchange-value represents its 'commodity-being', that is, its exchangeability, an abstraction that can be expressed only in quantitative terms, and as money. Broadly speaking, capital represents that regime in which exchange-value predominates over use-value in the production of commodities – and the problem with capital is that, once installed, this process becomes self-perpetuating and expanding”.

Foster, Clark and York (2010:40) agree on this point: “It is exchange value, which knows only quantitative increase – not use value, which relates to the qualitative aspects of production – which drives the system”. The self-perpetuation of capital, referred to by Kovel, is an important point and will be addressed below, but for now the focus is on the point that capital epitomises ‘the quantitative’, a crucial Promethean characteristic of Capitalism that is shared with 'mechanics'/Technology and Science, as discussed in previous sub-sections of this chapter. In Capitalism, the focus on the quantitative is elevated to soaring heights by the exclusive focus on quantifiable profit, especially monetary profit. Baer (2012:300) reminds readers, via reference to Foster, that private “corporations are institutions with one and only one purpose: the pursuit of profit”; the industries scrutinised in Chapter 2 are constituted by private corporations. Kovel (2002:48) discusses this 'pursuit of profit' with reference to *the* benchmark of progress in industrial neoliberal ‘free-market’ Capitalist society – GDP. Capital, he says,

employs purely quantitative indices such as gross domestic product (GDP) because they are convenient indices of accumulation. Scarcely a critic of the ecological crisis has refrained from commenting upon the stupid brutality of this number, which reduces the living and the dead alike to the common denominator of what can be extracted from their commodification. It is necessary, though, to see thinking in terms of GDP as no mere error, but the actual logic of the reigning power...

To give a clearer picture of Capitalism's prioritisation of such indices, consider the following from the online Library of Economics and Liberty²⁸¹; the focus is on the USA, the country heralded as the epitome of free-market Capitalism, a system that has had global reach for generations; note the discursive assumptions regarding domination via the phrase, 'the world's best system of economic statistics':

Gross domestic product, the official measure of total output of goods and services in the U.S. economy, represents the capstone and grand summary of the world's best system of economic statistics. The federal government organizes millions of pieces of monthly, quarterly, and annual data from government agencies, companies, and private individuals into hundreds of statistics, such as the consumer price index (CPI), the employment report, and summaries of corporate and individual tax returns. The U.S. Department of Commerce then marshals the source data into a complete set of statistics known as the National Income and Product Accounts. This set of double-entry accounts provides a consistent and detailed representation of production in the United States (GDP) and its associated income (national income).

The link is almost explicitly made: the 'logic of the reigning power', that power being free-market Capitalism *itself*, is expressed in indices such as GDP, which are 'purely quantitative' in the most discursively reductionist of manners. Such exclusive economic quantitiveness has been identified in previous sub-sections as a prominent discursive influence on human actions with consequences that have gradually built up to the ecological crisis; this 'quantitative' 'discursive influence' is a characteristic of the Promethean, so at the very least one can safely and soundly claim that Capitalism (with its inherent 'love' of quantitative indices) is, from the outset, dominated by at least one brutally Promethean characteristic, which has been shown above to have very clear historical roots and very dire ecological consequences. Indeed, Baer (2012:57), in *Global capitalism and climate change*, quoting Bodley, points out the link between GDP and CO2 emissions: "One crucial growth trend is for scale increases in a country's per capita GDP to correlate strongly with scale increases in carbon dioxide emissions per capita. ...This correlation points to a link between economic growth and global warming and ecological degradation".

The above line of reasoning holds that Capitalism is, as a start, the Promethean quantitative writ large – the second and more ecologically-impacting characteristic of Capitalism is also Promethean: Capitalism's inherent imperative to grow endlessly. This is a well-known aspect of the economic system, and it will again resonate with other tendencies of the Promethean: dominion, as well as the drive to 'dominate and multiply' (at the expense of nature). Kovel (2002:41), reiterating first that Capitalism is, fundamentally, quantitative, reveals the following about the Capitalist addiction to growth:

[C]apital is quantitative in its core, and imposes the regime of quantity upon the world: this is a 'necessity' for capital. But capital is equivalently *intolerant* of necessity; it constantly seeks to go beyond the limits that it itself has imposed, and so can neither rest nor find equilibrium: it is irredeemably self-contradictory. Every quantitative increase becomes a new boundary, which is

281 <http://www.econlib.org/library/Enc1/GrossDomesticProduct.html> accessed 6 November 2014.

immediately transformed into a new barrier. The boundary/barrier ensemble then becomes the site of new value and the potential for new capital formation, which then becomes another boundary/barrier, and so forth and on into infinity – at least in the logical schemata of capital. Small wonder that the society formed on the basis of producing for the sake of capital before all else is restlessly dynamic, that it introduces new forms of wealth, and continually makes the past forms obsolete, that it is obsessed with change and acquisition – and that it is a disaster for ecologies.

Elsewhere, Kovel (2002:vii) alludes to the boundary/barrier 'ensemble' as “capital's ruthless desire to expand...”. Such an addiction to endless growth is a characteristic of Capitalism that has led many commentators to compare the economic system to cancer. Kovel (2002:51), for example, speaks of “the cancerous imperative to expand”. Thomas Princen (2010:32) goes much further; in the following observations, he succinctly brings together many aspects of this research paper so far in a hard-hitting manner, while raising the issue of 'Capitalism as cancer':

Here is the paradox: the economy depends on increasing consumption, but ever-increasing consumption strains ecosystems, both resources (soil and water, for instance) and waste sinks (the oceans and the atmosphere). Before tackling this paradox head-on, let's turn the question of consuming less on its head. A system that grows endlessly crashes. Think of cancer cells, debt-ridden mortgages, fisheries. It defies logic, not to mention a few well-known laws of physics (like thermodynamics), to presume that with continuing growth in consumption – that is, continuing growth in the total throughput of material and energy through our economy – the current economy will not crash.

Kovel (2002:x) agrees: “One would think that a moment of doubt would be introduced into the official scenario by the screamingly obvious fact that a society predicated on endless expansion must inevitably collapse its natural base”. In the following chapter I will look at discursive apparatuses in operation that prevent, or marginalise, the 'moments of doubt' Kovel has in mind and keep members of society at large ideologically subservient to the Capitalist economy in all its Promethean glory. For now, the ecological consequence of the cancerous imperative to expand needs to be reiterated for the sake of establishing a clear link between it and Capitalism, the contemporary heart of Prometheanism globally: the imperative to expand “continually erodes the edges of ecologies along an ever-lengthening perimeter, overcoming or displacing recuperative efforts and accelerating a cascade of destabilisation” (Kovel 2002:51). The details of the ecological crisis (Chapter 1) caused by human industry (Chapter 2) is evidence enough of the truth of Kovel's observation, but Baer (2012:115) lists a few examples that are useful reminders of what 'cancerous' expansionary processes look like:

Global capitalism, which relies heavily upon fossil-fuels, has played a significant role in the emission of greenhouse gases into the atmosphere, which in turn has contributed to climate change. The anthropogenic sources of climate change include a growing global population clamouring for both basic and luxury goods; the growing proliferation of motor vehicles; a growing number of airplane flights around the world; the construction of factories, offices, shopping malls and dwelling units; the overheating and overcooling of these facilities; industrial agriculture; deforestation; the production of consumer products (many of which are not necessary for subsistence); militarism; and various other operations.

The Capitalist Promethean drive to expand endlessly, intimately linked with its exclusively quantitative lens through which nature is viewed, is clearly epitomised by money, specifically, fiat currency, that is, fractional reserve money (see sub-section 2.9), without which Capitalism in its neoliberal 'free-market' sense would not be possible. This observation from Kovel (2002:38) reveals

something of the role of money: “capital [is] that ubiquitous, all-powerful and greatly misunderstood dynamo that drives our society. The established view sees capital as a rational factor of investment, a way of using money to fruitfully bring together the various features of economic activity”; in other words, 'money makes the world go round', as is commonly said. Already here, money – purely quantitative – seems to be at the 'heart' of Capitalism. However, the workings of fiat currency were explored at the end of Chapter 2 and were shown to be entirely counter-intuitive; there it was observed that money *is* debt, a point that can be evidenced here quite simply by reiterating something that was established and evidenced in Chapter 2, specifically that as the world's supply of money has increased, so has the world's debt-levels. *Debt increases alongside the money-supply*. Crucially here, one must remember that debt is contractual, i.e. when a loan is taken out, the loan-holder signs to pay back the debt, and as was seen in the final section of Chapter 2, governments are indebted to reserve banks to repay loans; but the money to repay the loans can never be created without creating more debt because money is mainly created in the acts of securing more government bonds and through fractional reserve lending – again, debt increases alongside the money supply; or vice versa now, *the money supply increases as debt increases*. Such is the nature of Capitalism's self-perpetuation, as alluded to in a fairly recent quote from Kovel. The relevance of this established fact of the counter-intuitive workings of the Capitalist monetary system (see sub-section 2.8) will here be made clear by repeating important information from near the end of the relevant section from Chapter 2: the need for continued economic growth fuelled partly by the fractional reserve money system [i.e. the need to pay back debt] is commented on at wiki.mises.org²⁸²; the two “critics” are listed as David Korten and Henri Monibot: there “are also critics... who contend fractional reserve banking (by creating a necessity for indefinite economic growth) leads to environmental destruction and a sudden, catastrophic depletion of the earth's natural resources as the unsustainable, exponential consumption of the world's scarce natural resources reaches its inevitable limits”.

This need for continuing economic growth as per the imperatives (and corresponding systems) of Capitalism is why Kovel writes, in his second edition (2007:ix) to *The Enemy of Nature*, that there “is now a widespread assumption, which was much more limited five years ago [when the first edition of the book was published], that the problem is not this corporation or that, or 'industrialization,' technology, or just plain bad luck, but all-devouring capital”. Baer (2012:40) concurs: Capitalism “is a global economic system that in its drive for profits requires ongoing accumulation and expansion. It systematically exploits human beings and the natural environment in pursuing its aims, despite rhetoric that it contributes to the prosperity and well-being of all human beings, albeit some more than others”. And Foster, Clark and York, in their book *The Ecological Rift: Capitalism's War on the Earth* (2010:1) all agree and argue that “a deep chasm has opened up in the metabolic relation between human beings and nature – a metabolism that is the basis of life itself. The source of this unparalleled crisis is the capitalist society in which we live”.

The 'need for continued economic growth' (think GDP) at the expense of ecology has, in this sub-section about Capitalism, been established as a powerful Promethean characteristic, the historical roots of which have been traced. Considering this, it seems safe to say that Capitalism is the Promethean reduced into its most crude, naked form: exclusively quantitative, inherently dominating over nature, mechanistically industrious, reducing everything to 'materials' or 'resources'

282 http://wiki.mises.org/wiki/Criticism_of_fractional_reserve_banking#cite_ref-212 accessed 16 August 2014

(including 'human' resources); and its most important symbol is money, something that at its core is, ironically, debt; the common view is to see this debt as simply 'financial', but as has been shown in Chapter 2 and again briefly in this sub-section, such a debt is not an arbitrary concoction in the workings of the Capitalist monetary system. Rather, the debt is ultimately to those things (nature, and in a sense people too, who from a different perspective are included under the umbrella term 'nature') which have been reduced to 'commodities' via Capitalist industry. In becoming the global economic system (which is unsurprising considering its compatibility with the Promethean qualities of dominating and having dominion over), it has imposed naked Prometheanism onto the world; the ecological situation is therefore an inevitable consequence of the Promethean writ large, and Capitalism is the most recent and ubiquitous of its manifestations. I will end this sub-section with the following scathing observation from Kovel (2007:vii):

[O]ur all-conquering capitalist system of production, the greatest and proudest of all the modalities of transforming nature which the human species has yet devised, the defining influence in modern culture and the organizer of the modern state, is at heart the enemy of nature and therefore humanity's executioner as well.

3.6 On the Industrial Growth Society, or ACID

The above sub-sections were written without knowledge of what follows immediately below. When the information that follows was encountered, however, the resonance with much of what has been explored above about various anti-ecological, dominant discourses was startlingly clear. It has been included here because of its uncanny relevance. The points are taken directly from an essay by Hoyer (2012:48) called *Ecophilosophy and the environmental debate*; he is commenting on "the Industrial Growth Society", later referred to as the "Advanced Competitive Industrial Dominion" [ACID]; Hoyer attributes these summary points about ACID to Kvaloy. The summary includes one key aspect, namely competition, which is clearly 'Promethean' but which has not been included in the analysis above because this quality was not invoked during the analysis; its inclusion here must be taken as its inclusion within the broader analysis above, specifically of Capitalism. These points all summarise IGS or ACID; hopefully the fact that these points are taken straight from Hoyer is tolerated due to the fact that Hoyer took the points straight from Kvaloy:

- It is a society that has as its basis a continuous growth in the output of industrial products, one where questions about whether these products are life necessities are not treated as important questions.
- The growth in industrial production is propelled through the mechanism of competition, whether it is between persons, industrial corporations, or industrial states. Not to compete implies not to survive.
- IGS's most important industrial resource and means of competitive survival is *applied science*. This – coupled with the propellant of competition – leads to a situation in which the number and variation of ways to utilize nature and humans to promote industrial growth interests is increasing exponentially. The 'front of attack' upon the total ecosystem – including the social system – is widening with increasing speed and the sum total and nature of this attack is continuously growing more difficult to grasp.
- To this last point it must also be added that the mounting competition to get on the market first

with new products requires such an increasing number of scientists and engineers that they become *narrow-viewed super specialists*. These are people who are systematically trained to lose the overview that solutions to the system's crisis demand.

- IGS's most characteristic tool for social coordination and for repairing social imbalance or disruption is *standardization* and *quantification*. Closely knit and complex social units, established through slow adjustment over the ages to specific and varying local requirements, are cut into pieces, and the pieces refitted into simplified, standardized, and quantifiable patterns – suitable for centralised, big-unit switchboard control.
- The last phenomenon – that quantification has become the general tool of social problem-solving and steering – has paved the way for the *development of control and manipulation techniques* through the use of computers, communication via electronic networks, and electronics in general. Viewed as a whole, this constitutes a gigantic stride towards shaping humanity into an accessory to machinery, cutting us off from self-control and from the eco-conscious mastery of our destiny in the global environment.

3.7 Promethean Timeline

In sub-sections 3.2 to 3.5, a meandering chronology of events was indirectly offered in the analysis of ecologically-insensitive (i.e. Promethean) discourses; the chronology can be summarised here as follows in order to situate Capitalism as *the current* dominant anti-ecological discourse in the world. Note that this timeline is in keeping with Hadot's well-evidenced view that the Promethean method of “unveiling the secrets of nature... extends from the beginnings of Greek mechanics to the mechanistic revolution of the seventeenth century and opened the way for the technological and industrialized world in which we live” (Hadot 2008:155) – which is to say a Capitalist world:

- Ancient Greek philosophers and scientists inquire into the 'secrets' of nature, not necessarily in order to 'unveil' nature of her mystery, but rather in the sense that nature be understood as inherently mysterious.
- As a consequence of the Ancient Greeks' cognitive inquiries, a system of knowledge develops known as 'mechanics' ('atomistic' theories included), according to which nature has the potential to be viewed as an entity with secrets to be 'unveiled' for human 'profit'.
- The Christian Church gradually popularises the notion that 'man' has dominion over nature.
- The invention and spread of the mouldboard plough, an event with 'mechanical' roots, revolutionises agriculture so that 'mankind' theoretically (via Christian ideology) and practically (via the new Technology) dominates nature for 'his' profit.
- Post-Renaissance discoveries such as the telescope and microscope revive 'mechanical' and atomistic views of nature; the view that nature's secrets are meant to be 'unveiled' becomes the project of Science; the view that the world is a giant machine that can be tampered with via the understanding of quantities and numbers is gradually entrenched.
- 'Technology' in its modern form emerges out of the blending of various aspects of quantitative Science and anthropocentric religion; nature's mechanistic 'unveiling', which is discursively driven by historically Promethean ideologies, spreads gradually via the colonial endeavours of Europe (the seat of Science and Christianity).
- The background use of oil as a fuel-source is brought to the forefront when the first Modern oil

well is put into production in the mid-1800s; Promethean Technology now has a fuel-source to power what would become a global expansion of Promethean attitudes.

- 'The quantitative' becomes the primary measure of progress and Capitalism takes its seat as the world's dominant economic system; an 'endless growth' model is unleashed against nature.
- Fractional Reserve money allows Promethean super-powers to 'create money from nothing', structurally adjusting countries all over the world into government debt-stressed situations; this in turn accelerates the 'endless growth' paradigm due to the need to 'stimulate' the economy to increase GDP and pay back government bonds to reserve banks, increasing the speed at which the human population, itself increasing exponentially, acts according to Promethean economic imperatives at the expense of nature.
- Promethean characteristics are entrenched the world over via globalisation; the stage is set for the explicit focus on 'the quantitative' to explode – the human population has the fuel-source, the ideological/attitudinal impetus, and the economic imperatives to expand at the expense of nature.

3.8 Summary: Promethean Characteristics

From the above analysis in Chapter 3, several prominent characteristics and features of the relevant 'dominator' shapers of discourse stand out that are listed below. The points are indicative of what will be called 'the Promethean'. As seen in a number of sub-sections of this chapter, Hadot outlines what he means by the Promethean (2010:95–98), and the approach in this sub-section is to express the listed 'characteristics' in ways that are compatible with Hadot's general approach. Each of the points has been addressed in the above sub-sections constituting this chapter. The phrasing used to describe Promethean traits in the various points below may invoke different thematic connotations, hence what may seem at times to be a repetition of similar points.

- Humankind is seen to have dominion over nature.
- Natural 'objects' are seen as existing *to serve human purposes*.
- In a religious context, it is seen as God's will that humans exploit nature.
- Nature is seen as something with a secret which human beings have the right to 'unveil'.
- In a judicial sense, human beings are seen as having discretionary power over nature.
- Nature is suppressed and oppressed.
- Natural 'objects' are persistently compartmentalised and categorised into smaller and smaller parts, increasingly detached from a synergistic totality.
- Reductionism is a standard model of operation.
- It is assumed that the relationship between humankind and nature is a struggle.
- 'Assaulting', 'commanding' and 'attacking' nature are par for the course (think genetic modifications, or the atom bomb).
- Human self-preservation is taken as a perfectly acceptable *end* regardless of the *means* to that end.
- Nature is not inherently or intrinsically valuable; it is instrumentally valuable.
- Subjective and instrumental Reason are the *modi operandi*, as opposed to objective reason in the sense used by Horkheimer.
- The aim is to 'control subject matter'; 'matters of ultimate concern' are not considered.

- A pragmatic, utilitarian attitude prevails.
- 'Progress' is roughly equated with Technological and economic 'development'.
- The atomistic hypothesis is a favoured Scientific model.
- Nature is viewed as a machine, and more recently as an organism subject to Scientific/genetic manipulation.
- *Utilisation* is paradigmatic, versus *contemplation*.
- There is an obsessive focus on things measurable and quantifiable.
- 'The program' is to manipulate nature.
- Technology is 'developed' based on the calculations made available by reductionist Science.
- The appetite for profit is a powerful motivating force.
- Quantitative concerns are predominant.
- Benchmarks of success are expressed quantitatively.
- Endless growth is imperative.
- Ecological-insensitivity is institutionalised.
- Nature is seen as a source for 'materials' and 'resources'.
- Competition is emphasized, versus cooperation.

3.9 Conclusion to Chapter 3

In this chapter I have investigated and explored several dominant 'shapers of discourse' (Christianity, Technology, Science, and Capitalism) that have historically provided the motivation and the means for the project that is the human domination of nature. The Promethean project steered human ingenuity and action in an almost exclusively 'instrumentalist' and utilitarian direction, partly resulting in the dispensation known as ACID, constituted partly by ubiquitous industries (see Chapter 2) that have been the direct physical causes of the ecological crisis (see Chapter 1). The industries are the result of an attitude that developed historically from the arenas of Christianity, Technology, Science and Capitalism, an attitude I have traced in this Chapter. Hadot (2008:101) calls this attitude 'Promethean' and summarises it as consisting of "the use of technical procedures to tear nature's 'secrets' from her in order to dominate and exploit her"; he adds, as has been shown in this chapter, that it "has had gigantic influence. It has engendered our modern civilization and the worldwide expansion of science and industry". Hadot (2008:98) hints at another ingredient in the ideological Promethean pot: profit. He writes, "The blind development of technology and industrialisation, however, spurred on by the appetite for profit, places our relation to nature, and nature itself, in danger" – I explored the now-global manifestation of the 'appetite for profit' when I investigated and analysed Capitalism. Based on what has been shown in this chapter, Hadot's remarks (about nature being in danger) are 'spot on': the attitudes spread via the dominance of the listed shapers of discourse are (as shown in this Chapter) ones that give humankind mandate to control nature for almost exclusively instrumental, utilitarian, subjective, pragmatic, and anthropocentric purposes. It is therefore *completely unsurprising* that the industries explored in Chapter 2 are so ecologically-destructive – they are premised on the prevailing attitudes that have dominated historically, i.e. the attitudes that have accompanied the dominators that are Christianity, Technology, Science and Capitalism and which have culminated in ACID. In the following chapter, I work to reveal several 'mechanisms' that more subtly perpetuate the reign of the Promethean.

Chapter 4

What perpetuates the 'attitudinal factors' causing the ecological crisis?

4.1 Introduction

The previous chapter identified 'Promethean', anti-ecological characteristics as dominant in the ecologically-insensitive histories of Christianity, Science and Technology – indeed, their characteristics are partly what made it possible for the shapers of discourse to become dominant globally. It was then shown that Capitalism embodies such characteristics, and Kovel's following remark (2002:vii) was substantiated: Capitalism “is the uncontrollable force driving our ecological crisis”. Kovel (in a quote encountered in Chapter 3) is understandably perturbed by a general ignorance and disregard for the blatant and pernicious paradox that drives Capitalism: “One would think that a moment of doubt would be introduced into the official scenario by the screamingly obvious fact that a society predicated on endless expansion must inevitably collapse its natural base” (2002:x). His next words are telling, and hint at the focus of this chapter: “However, thanks to a superbly effective propaganda apparatus and the intellectual defects wrought by power, such has not so far been the case”. This chapter focuses on aspects of the 'propaganda apparatus' to which Kovel refers in an attempt to answer the question, *what perpetuates the 'attitudinal factors' causing the ecological crisis?* – or, to rephrase, *what blocks social change?*

4.2 Mill's dangers of Democracy

In 1859, the same year that the first commercial oil²⁸³ well went into production in Titusville, USA, J.S. Mill published *On Liberty*, a seminal political text focused on “the nature and limits of the power which can be legitimately exercised by society over the individual” (Mill 1975:3) – from this statement alone it can be seen that Mill regarded society as something that does exercise power over the individual, or that does influence an individual ideologically (or, for my purposes, 'attitudinally') and physically. His outline of the historical 'development' of the concept of democracy²⁸⁴ toward an actualised and historical version of Democracy²⁸⁵ is useful as a very broad initial glimpse of a process whereby Promethean attitudes are perpetuated and social change is prevented. Mill's view of the development of democracy will be outlined below and thereafter commented on.

Mill (1975:3) begins his outline of the development of democracy by stating that in “old times” liberty meant “protection against the tyranny of the political rulers”. The description provided by Mill of these times is one where 'the rulers' – “a governing One, or a governing tribe or caste, who derived their authority from inheritance or conquest” (Ibid) – were oppressive towards 'the ruled';

283 At this early stage of this sub-section I must remind one that the widespread commercial use of oil was identified in Chapter 2 as one of the primary physical causes of the ecological crisis.

284 As I explain in the 'Conventions' section, I use a lower-case 'c' to denote democracy as a concept rather than as an actually existing system, based on Speth's distinction (which I explain in the 'Conventions' section) between idealised forms and actually existing systems.

285 As I explain in the 'Conventions' section, I use an upper-case 'C' to denote Democracy as it has actually 'developed' in practice (versus in theory) and historically.

as Mill grants, the rulers could use their power against enemies and thereby serve something of a useful protective purpose for the ruled, but there was nothing to stop the rulers from using the same powers against their subjects. *Liberty in this scenario is a limitation of rulers' powers*: "The aim, therefore, of patriots was to set limits to the power which the ruler should be suffered to exercise over the community; and this limitation was what they meant by liberty" (1975:3-4). Mill goes on to identify two methods of establishing such liberty (1975:4): the first was to obtain

a recognition of certain immunities, called political liberties or rights, which it was to be regarded as a breach of duty in the ruler to infringe, and which if he did infringe, specific resistance, or general rebellion, was held to be justifiable. A second, and generally a later expedient, was the establishment of constitutional checks, by which the consent of the community, or of a body of some sort, supposed to represent its interests, was made a necessary condition to some of the more important acts of the governing power.

This transition from the unrestrained power of tyrants to the limitation of rulers' powers by "constitutional checks" (Ibid) is an important step in the direction of democracy, but for democracy to exist in its most basic form, the ruled must be able to elect the rulers – this is indeed the next (i.e. second) historical political phase that Mill identifies, one where the "magistrates of the State" (1975:4) are the "tenants or delegates" of 'the people' and can be revoked from the seat of power and influence via the process of elections. These are important characteristics of the emergence of democracy: the rulers are "identified with the people" (Ibid) and the rulers' "interest and will" is supposedly the "interest and will of the nation":

The nation did not need to be protected against its own will. There was no fear of its tyrannising over itself. Let the rulers be effectually responsible to it, promptly removable by it, and it could afford to trust them with power of which it could itself dictate the use to be made. Their power was but the nation's own power, concentrated, and in a form convenient for exercise.

In this second stage towards the development of democracy, liberty is clearly conceived of entirely differently to that of the first stage. In the first stage, as has been discussed, liberty is *liberty from* the oppression of rulers; in the second stage, liberty is *liberty to* elect representatives of 'the people' who then act on behalf of the people's best interests and who in this way achieve a kind of self-governance. After discussing the second stage in the development of democracy, however, Mill is quick to point out that the "true state" (1975:5-6) of the political situation was historically soon to be recognised as somewhat more complicated than conveyed in the second stage:

The 'people' who exercise the power are not always the same people with those over whom it is exercised; and the "self-government" spoken of is not the government of each by himself, but of each by all the rest. The will of the people, moreover, practically means the will of the most numerous or the most active part of the people; the majority, or those who succeed in making themselves accepted as the majority; the people, consequently, may desire to oppress a part of their number; and precautions are as much needed against this as against any other abuse of power. The limitation, therefore, of the power of government over individuals loses none of its importance when the holders of power are regularly accountable to the community, that is, to the strongest party therein.

This is where Mill employs the well-known phrase, 'the tyranny of the majority': "the tyranny of the majority" is now generally included among the evils against which society requires to be on its guard". Initially, Mill identifies the tyranny of the majority "as operating through the acts of public authorities" (1975:6), so the spotlight is still on the political rulers who represent the interests of the majority; these rulers can still be voted out of office via elections, presumably to be replaced by another body of rulers who represent the interests of the majority. A vicious circle, however, should

here be apparent, one where the faces of the 'rulers' are sure to change, but where such change of person or party distracts from the particular type of political system being entrenched over time as the different political 'entities' 'come and go' – this is where I suggest that the change from the more idealistic phase of democracy 'with a lower-case' "c" transitions into something more institutionalised, something 'with an upper-case' "C".

The fourth and final stage in the development of Democracy as seen by Mill is an extension of the third stage: the third stage involves the tyranny of the majority by means of public authorities, as discussed. The fourth stage sidesteps the public authorities. Mill begins referring to the self-tyrannising aspects of 'society': "its means of tyrannising are not restricted to the acts which it may do by the hands of its political functionaries" (1975:6). Instead, society is identified as an entity with the ability to infringe on personal liberty via "the tyranny of the prevailing opinion and feeling". It is unsurprising that this stage occurs chronologically after the previous one where 'the people' gradually become accustomed to *the notion that a change of political person or party in power is a justified kind of political change*, rather than, for example, focusing on whether or not *the consent of the majority of people who vote as the basis for establishing political authority* is rationale enough to assume that *all people in a society should submit to such an authority*. 'Universal' tacit consent to power therefore is assumed and popularised on a political level, which gradually spills over into the social realm, wherein the same kind of 'Democratic' rationale arises: power is established on the basis of the notion that 'the majority call the shots', a notion that needs no justification other than itself. Mill (Ibid) sees the tyranny of the majority as far "more formidable than many kinds of political oppression":

Society can and does execute its own mandates: and if it issues wrong mandates instead of right, or any mandates at all in things with which it ought not to meddle, it practises a social tyranny more formidable than many kinds of political oppression, since, though not usually upheld by such extreme penalties, it leaves fewer means of escape, penetrating much more deeply into the details of life, and enslaving the soul itself. Protection, therefore, against the tyranny of the magistrate is not enough: there needs protection also against the tyranny of the prevailing opinion and feeling; against the tendency of society to impose, by other means than civil penalties, its own ideas and practices as rules of conduct on those who dissent from them; to fetter the development, and, if possible, prevent the formation, of any individuality not in harmony with its ways, and compel all characters to fashion themselves upon the model of its own.

Needless to say, Mill's recommendation of "protection also against *the tyranny of the prevailing opinion and feeling*" has not been heeded, a fact that will be established in later sections of this chapter – if it is not already clear from a mere glance at the contemporary 'advanced' industrial neoliberal 'free-market' Capitalist world as described in Chapter 3. Continuing, Mill (1975:62) identifies the dominant medium of his time – the newspapers – as instrumental in the process whereby the 'prevailing opinions and feelings' of society are spread: "the mass do not now take their opinions from dignitaries in Church or State, from ostensible leaders, or from books. Their thinking is done for them by men much like themselves, addressing them or speaking in their name, on the spur of the moment, through the newspapers". Mill (1975:85) later refers to newspapers again when he speaks of his 'age' as an "age of newspapers, railways, and the electric telegraph". These are all Technologies that allowed 'popular opinion and feeling' to spread at increasing speeds, taking with it the assumption that majority-rule is justification enough for 'universal' consent to political power. And considering my focus on the ecological crisis, it must be remembered that these Technologies spread 'popular opinion and feeling' predicated on the Promethean attitudes I traced in Chapter 3,

attitudes that have had disastrous consequences for nature, as I have already shown.

Already, enough about Mill's views on the dangers of Democracy has been summarised in order to make a few pertinent observations about the “superbly effective propaganda apparatus” (Kovel 2002:x) referred to at the start of this sub-section. To begin to comment initially on the first three stages: as per Mill's historical outline of the 'development' of Democracy, in the first stage rulers are distinctly different from the ruled in that the former are explicitly the power-holders; in the second stage it is naively held that power is equally distributed throughout society because each person, via voting, is symbolically represented by the elected person or party; in the third stage the naiveté of stage two is recognised – as Mill says (already quoted), the “‘people' who exercise the power are not always the same people with those over whom it is exercised”, and caution is raised about the tyranny of the majority, or as Mill states (already quoted), about the tyranny of the majority “who succeed in making themselves accepted as the majority”. These three stages and their characteristics are uncannily well situated within the historical context of the ‘development of’ the Promethean as detailed in Chapter 3. There it was shown that one crucial factor that paved way for the dominance of the Promethean was the reign of the Roman Catholic church, which widely (and often violently) eliminated opposition to its own dogmas and simultaneously enforced ideological and attitudinal stances where humankind is granted dominion over the earth. This era seems to correspond well with the first stage of Mill's outline of the development of Democracy, where rulers are described as despotic – indeed, feudalism, with all its connotations of despotism, reached its height during the reign of the Church. This epoch lasted explicitly for approximately a thousand years, so its accompanying assumptions and attitudes about dominion were well ingrained into the collective human psyche when during the Renaissance and Enlightenment the second stage of Democracy described by Mill seems to be operational alongside the various Scientific explorations of humankind's Technological abilities in the name of 'progress'. The relevance to Mill's analysis here is that the scene was being set in relatively young Democracies for the fostering of the tyranny of prevailing opinion and feeling – which can now be called Promethean.

It also needs to be pointed out that Mill's warning, indicative of the third stage – that the “‘people' who exercise the power are not always the same people with those over whom it is exercised” – is all too relevant considering that for the bulk of the history of Democracy, Christian Capitalist males with powerful Business interests have occupied seats of political power²⁸⁶. To provide evidence for this point, one can access the lists of the presidents of the United States of America, and the Prime Ministers of The United Kingdom – two of the most powerful forces behind the globalisation of Promethean Business activity; activity that had been occurring prior to the widespread commercial use of oil, and which such use accelerated exponentially. These lists provide glimpses into the ‘aristocratic’ and ‘new-wealth’ family backgrounds of the leaders, which is to say family backgrounds that owe their economic fortunes to the exploits of explicitly Promethean Capitalist Business interests²⁸⁷. What is quite certain is that, despite exceptions to the rule, the political powers-that-be who get to run for election are members of a class “*who succeed in making themselves accepted as the majority*” – or better, a class that has succeeded in making its economic views accepted as the views of the majority – due to the economic and political privileges that have been synonymous with

²⁸⁶ This continues to be the case, with the business tycoon Donald Trump having been elected American President.

²⁸⁷ So much can be added here about the dubious qualities of some of these men who are commonly heralded prominent in the legacy of Democracy – controversial claims of Abe Lincoln ‘owning’ slaves, for example – but space constraints do not permit such additions; the information, however, is widely available.

power for at least a few centuries. This line of thought is relevant to Mill's fourth stage in the development of Democracy, whose main feature is that of “prevailing opinion and feeling” (already quoted) which Mill situates within the context of the mass media. Chomsky and Herman, in *Manufacturing Consent: The Political Economy of the Mass Media* (1988:306), remind one that the mass media “are effective and powerful ideological institutions that carry out a system-supportive propaganda function by reliance on market forces, internalized assumptions, and self-censorship, and without overt coercion” – this clearly supports Mill’s assertion that the mass media (at least, in his day, the newspapers) are instrumental in determining the ‘flavours’ of prevailing opinion and feeling. It follows that the mass media have worked explicitly to promote Promethean ‘Business as usual’, at the expense of the possibility for significant social change away from the neoliberal Capitalist paradigm²⁸⁸.

Finally in this sub-section, to provide a specific example of just how relevant Mill's observations about the dangers of Democracy are when it comes to the “superbly effective propaganda apparatus” Kovel refers to, consider the case of the South African 'revolutionary' ANC that was to replace the oligarchic National Party of Apartheid: the ANC was explicitly communist prior to its victory in the 1994 elections, and immediately thereafter, as the party of ‘the majority’, explicitly perpetuated the well-established Capitalist practices of the rest of the Promethean world – unsurprising then that Naomi Klein, in her *Shock Doctrine* (2007), refers to South Africa as a “living testament to what happens when economic reform is severed from political transformation”²⁸⁹. In this example, what seemed to be ‘the majority’ were the disenfranchised black and coloured peoples of South Africa marginalised under the Apartheid government, but this view would be misleading. The ‘national’ majority was instead overshadowed by an ‘international’ majority *attitude* and *ideology* in a globalised world where the media largely promote specific Promethean interests (as they have done for more than a century and a half, considering Mill's warning about the newspapers of the mid-19th century), interests that the ANC government clearly prioritise with its explicit Capitalist interests and focus on Capitalist Business-as-usual and 'economic development' – which has been shown in this thesis to have disastrous consequences for ecology. More about this, as well as other issues that have been raised in this sub-section, will be explored in the sub-section called ‘Democracy in a neoliberal free-market Capitalist system’ (sub-section 4.3).

4.3 Democracy in a ‘free-market’ neoliberal Capitalist system

The central focus of this sub-section of Chapter 4 is on Democracy as a system that prioritises and perpetuates the spread and power of neoliberal, ‘free-market’²⁹⁰, Promethean attitudes and

288 One might wish to argue that the internet is perhaps the exception to the rule, considering that internet is commonly spoken about as a truly ‘democratic’ medium. Hardt and Negri give the internet some credit in *Empire* (2000:299), while also pointing to its double-edged us (2000:300), but on the whole, it has promoted the interests of Capitalism, as Castells’s analysis (in *The Rise of the Network Society*, 2010) of its role in promoting the currently dominant “space of flows”, which is the basis of present Capitalist expansion, shows – see Olivier’s Thoughtleader article ‘The ‘space of flows’ and the social elites of today’ at thoughtleader.co.za/bertolivier/2013/04/21/the-space-of-flows-and-the-social-elites-of-today/ accessed 31 January 2017. This is not the place to conduct an analysis of the role of the internet’s place in the perpetuation of the Promethean edifice, and such an analysis is unnecessary in the argument I have developed about the mass media in light of Mill’s ideas already identified.

289 I have used an e-publication of the book, where the page number for this quotation is unavailable. It is located in Chapter 10 of the book, and the chapter can be accessed here: <http://www.naomiklein.org/articles/2011/02/democracy-born-chains> (accessed 31 January 2017)

290 While broadly on the question of ‘what prevents social change?’, it is interesting to note that the use of the word ‘market’ in phrases such as ‘free-market’ instead of ‘Capitalist economics’ has the impact of preventing social change, as explained by John Kenneth Galbraith (quoted in Foster, Clark and York 2010:31): “When capitalism,

agendas, thus minimising the potential for social change to occur. The neoliberal ‘free-market’ Capitalist system, which I often refer to as ACID, i.e. advanced competitive consumer Capitalist industrial Democratic dominion (in light of the information in Chapter 4), is one whose *raison d’être* is economic growth and expansion (the truth of this point has already been glimpsed in sub-section 3.5), specifically the growth of a fiscal debt-based monetary economy, and via globalisation has been a primary accelerator of the ecological crisis²⁹¹. Note that the aim of this section is not to argue for an alternative to the neoliberal ‘free-market’ Capitalist economic system. This is noted because proponents of ‘the system’ tend to respond to criticism thereof with remarks along the lines of, “So what is the alternative?” This is a technique often employed to distract from the very real pernicious problems and mechanisms of the system under scrutiny, a system that demonstrably prevents alternatives from arising, as I am showing in this chapter.

Noam Chomsky²⁹² once responded to the question, “Do you vote?” with the following observation, an appropriate starting point for the analysis of this sub-section:

I often do, without much enthusiasm. In the US, there is basically one party – the business party. It has two factions, called Democrats and Republicans, which are somewhat different but carry out variations on the same policies. By and large, I am opposed to those policies. As is most of the population.

Chomsky’s observation may seem wry, but it draws attention to the homogeneity of a supposedly heterogeneous Democratic political sphere. Chomsky is commenting on the United States of America, but as McChesney points out in the introduction to Chomsky’s book, *Profit over People* (1999:10), the USA is “the spawning ground of liberal democracy”, which is to say the American model of Democracy is applicable when discussing Democracy in general considering the extent to which the model has via globalisation been implemented in almost all countries. Speth (2008:31), in *The Bridge at the end of the World*, agrees, emphasising the economic aspect of the model in question: “With increasingly few exceptions, modern capitalism... is the operating system of the world economy”. Speth (*ibid*) is very specific about the type of ‘operating system’ he is denoting, and it is clearly not exclusive to the USA:

I use “modern capitalism” here in a broad sense as an actual, existing system of political economy, not as an idealized model. Capitalism as we know it today encompasses the core economic concept of private employers hiring workers to produce products and services that the employers own and then sell with the intention of making a profit. But it also includes competitive markets, the price mechanism, the modern corporation as its principal institution, the consumer society and the materialistic values that sustain it, and the administrative state actively promoting economic strength and growth for a variety of reasons.

Chomsky and Speth’s respective singling out of this kind of policy – Business policy – in the political sphere draws attention to the USA’s explicit Capitalist attitudes and ideology, and, it follows, a global domination of Capitalism (as per Speth’s description above) in the political realm. McChesney makes

the historical reference, ceased to be acceptable, the system was renamed. The new term was benign but without meaning.... In reasonably learned expression there came ‘the market system.’ There was no adverse history here, in fact no history at all. It would have been hard, indeed, to find a more meaningless designation – this is a reason for the choice.... So it is of the market system we teach the young. It is this, as I’ve said, that sophisticated political leaders, compatible journalists and many scholars speak. No individual or firm is dominant. No economic power is evoked. There is nothing here from Marx or Engels. There is only the impersonal market, a not wholly innocent fraud”.

²⁹¹ Interestingly, the economic system under scrutiny is one that is itself in crisis, as evidenced by the 2008 financial crisis (a crisis that seems never to have been resolved, but rather ‘swept under the carpet’ instead), which was the latest of several historical crises of Capitalism.

²⁹² <http://www.newstatesman.com/international-politics/2010/09/war-crimes-interview-obama> accessed 27 February 2015

this clear in the introduction to Chomsky's *Profit over People* (1999:9) when he states that neoliberal Capitalism is “the defining political economic paradigm of our time” – which is to say a Promethean paradigm, considering the research I presented in Chapter 3 (see sub-section 3.5). ‘Our time’ is also one heralded by state spokespeople in general to be Democratic, which is true in the sense that Democracy is a political system where, ostensibly at least, leaders are elected via the voting process. But as I have shown in sub-section 4.2 via some of J.S. Mill’s work, democracy in its ‘idealised form’ is merely that – an *idealised* form – and a completely different ‘tyranny’ (Mill employs this word) is exercised via Democracy in its actual, existing form. To problematise Democracy even further: in its idealised form, democracy has strong connotations of ‘government *for* the people’, but as Steger (2009:121), quoting Nadar, points out in *In Globalisms: the great ideological struggle of the twenty-first century*, there is a serious problem for democracy when a Capitalist monetary economy is in use: a “‘massive avalanche of corporate money’ has buried the democratic system of the United States”. Keeping in mind the aforementioned point that the United States’ Democracy is representative of the globalised neoliberal Capitalist political sphere, it is useful to consider more information from Nadar via Steger:

Government has been hijacked to a degree beyond anything we have seen in the last 70 years. It’s been hijacked by corporate power, the multinationals mostly. They have their own people in government. They run [for elections] their own people, they appoint their own people, they get corporate lawyers to become judges. And when that happens you no longer have a countervailing force called government arrayed against excesses of what Jefferson called ‘the moneyed interest’. Instead, you have this convergence, almost a phalanx, of business controlling government and turning it against its own people.

This phenomenon is confirmed in a 2017 report from Oxfam called ‘An Economy of the 99%’²⁹³:

Many of the super-rich also use their power, influence and connections to capture politics and ensure that the rules are written for them. ... Some of the super-rich also use their fortunes to help buy the political outcomes they want, seeking to influence elections and public policy.

The above quotes bring into view the important (and alarming) issue that was focused on in the sub-section outlining Mill’s dangers of Democracy (sub-section 4.2), specifically the concern that liberty was in its nascent stages something that was conceived of as *opposing* the state, but later became something over which the state took mandate, which could happen via economic ‘hijacking’, as discussed by Nadar, and which was also apparent in the comment (near the end of the previous sub-section) by Klein about South Africa’s economic reform being severed from political transformation. The state may have at one stage in the history of Democracy included some regulatory functions, but since the ‘free-market’ economic neoliberal regimes unleashed by Reagan and Thatcher, deregulation has been a priority of this form of Capitalist Democratic government²⁹⁴. Speth (2008:218) goes so far as to say that government has been “captured by the very corporations and concentration of wealth it should be seeking to regulate and revamp”²⁹⁵. It is worth looking at the

293 https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-economy-for-99-percent-160117-summ-en.pdf accessed 7 February 2017

294 In 1987, during Reagan’s presidency, then Vice-president George H.W. Bush visited a Monsanto laboratory in 1987. The company was trying to circumvent what it called “bureaucratic hurdles”, a reference to regulatory processes. Here is a video clip (https://www.youtube.com/watch?v=L7Dw_aSbkDg) of Bush and his entourage being shown the gene-manipulation process. Of note are his words, “We’re in the dereg [deregulation] business. Call me”.

295 This point is driven home in the documentary, ‘The World According to Monsanto’ ([youtube.com/watch?v=N6_DbVdVo-k](https://www.youtube.com/watch?v=N6_DbVdVo-k) accessed 31 January 2017), where it is made abundantly clear that a ‘revolving door’ exists between Business and politics. Google search the name Michael Taylor as a case in point, and the phrase ‘Monsanto revolving door’; the infographic at the following site reveals unbelievable collusion: whale.to/a/monsanto_revolving_door.html

entire paragraph (Ibid) from which this sentence has been extracted for the clear relevance the themes raised have to previous sub-sections of this study:

There are many reasons why government in Washington today is more problem than solution. It is hooked on GDP growth – for its revenues, for its constituencies, and for its influence abroad. It has been captured by the very corporations and concentration of wealth it should be seeking to regulate and revamp, a pattern that has now reached alarming proportions. And it is hobbled by an array of dysfunctional institutional arrangements, beginning with the way presidents are elected.

Liberty of ‘the people’ cannot prevail in the conditions described so far in this sub-section, where the state is set up to prioritise Business interests. Peter Barnes, quoted by Speth (2008:218) explains:

Democracy is an open system, and economic power can easily infect it. By contrast, capitalism is a gated system, its bastions aren’t easily accessed by the masses; capitalism’s primacy thus isn’t an accident, nor the fault of George W. Bush. It’s what happens when capitalism inhabits democracy.

Barnes’ explanation goes some way in justifying Speth’s following damning remarks about the state of Democracy based on his research thereof. He (2008:217) calls it “weak, shallow, dangerous and corrupted”, stating that it is “the best democracy money can buy”, and that the “ascendency of market fundamentalism and antiregulation, antigovernment ideology makes the current moment particularly frightening”. Speth later (2008:219) explains, by way of Barnes again, that the notion of the state promoting “‘the common good’ is sadly naive. ...We face a disheartening quandary here. Profit-maximizing corporations dominate our economy. ...The only obvious counter-weight is government, yet government is dominated by these same corporations”. These observations are supported by the 2017 Oxfam report²⁹⁶ called ‘An economy of the 99%’, in which the Capitalist-Democratic system I have outlined in this sub-section is referred to as ‘crony Capitalism’; some effects of this insidious system are also identified:

Crony capitalism benefits the rich, the people who own and run these corporations, at the expense of the common good and of poverty reduction. It means that smaller businesses struggle to compete and ordinary people end up paying more for goods and services as they face cartels and monopoly power of corporations and those with close connections with government.

How do corporations achieve such influence? Speth (2008:219) quotes Gar Alperovitz to explain: “...the large corporation regularly”:

1. Influences legislation and agenda setting through lobbying
2. Influences regulatory behaviour through direct and indirect pressure
3. Influences elections via large-scale campaign contributions
4. Influences public attitudes through massive media campaigns
5. Influences local government choices through all of the above – and adds the implicit or explicit threat of withdrawing its plants, equipment, and jobs from specific locations.

Steger (2009:7) clearly agrees, specifically with the focus on points 1 and 5 regarding agenda setting and the influence on local government:

I contend that market globalism is a political ideology that has achieved dominance in our time. Espousing a hegemonic system of ideas that make normative claims about a set of social

296 https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-economy-for-99-percent-160117-en.pdf accessed 7 February 2017

processes called 'globalization,' market globalists seek to limit public discussion on the meaning and character of globalization to an agenda of things to discuss that supports a specific political agenda.

These 'normative claims about a set of social processes' used by 'market globalists' to 'limit public discussion' are factors that clearly prevent social change, whether the market globalists know it or not. Further factors are identified in the Oxfam report already mentioned in this sub-section:

...[T]he rich [construct] 'reinforcing feedback loops' in which the winners of the game get yet more resources to win even bigger next time. For example, they use their wealth to back political candidates, to finance lobbying and – more indirectly – to bankroll think tanks and universities to shift political and economic narratives towards the false assumptions that favour the rich.

Changing focus now to a frequently encountered pro-market claim made by market globalists: 'globalisation furthers the spread of Democracy in the world' – this is a claim that needs to be addressed. Steger (2009:84) points out that this “market-globalist claim is anchored in the neoliberal assertion that freedom, free-markets, free trade, and Democracy are synonymous terms”. This is an interesting point to consider in hindsight of something that was discussed when reviewing Mill's dangers of Democracy, namely that liberty (freedom, popularly and naively associated with Democracy) was originally conceived of as being *in opposition* to the state. Clearly, then, liberty and freedom are not necessarily synonymous with the ideology of a state, and in fact any consideration of the concept of freedom (based on this historical approach) needs to address the limitation of the power and extent of the state – in other words, liberty entails *freedom from* the power of the state²⁹⁷. 'Free trade' and 'free markets', despite their misleading names, are worthy of serious scrutiny due to their state endorsements, never mind the extensive problems (discussed at various stages in previous chapters and to some extent in this chapter already as well) associated with these explicitly Capitalist, Promethean systems. Steger (Ibid) draws attention to the most common tactic used by neoliberals and neoconservatives to “generate support for the equation of democracy and the market”. Note that this tactic is not to justify the 'sound logic' of the equation of democracy and the market, which one might expect as a safe approach in an argument, but rather to introduce a red herring: the “discrediting of traditionalism and socialism”. As mentioned, such a tactic is a red herring, because the real issues and problems of 'the system' under scrutiny are overlooked and instead different topics altogether become the central focus.

There are, of course, supporters of the notion that Democracy and economic development go hand-in-hand. Here is Steger (2009:85) quoting Fukuyama²⁹⁸:

Francis Fukuyama, for example, asserts that there exists a clear correlation between a country's level of economic development and successful democracy. While globalization and capital development do not automatically produce democracies, 'the level of economic development resulting from globalization is conducive to the creation of complex civil societies with a powerful middle class. It is this class and societal structure that facilitates democracy.'

Steger's response (Ibid) is that such a definition is a “'thin' definition of democracy” in use in the neoliberal 'free-market' Capitalist, globalised world, a definition that “emphasises formal procedures such as voting at the expense of the direct participation of broad majorities in political and economic decision making”:

²⁹⁷ See my comments, in the introduction to this study, on the concepts of positive and negative freedom.

²⁹⁸ See further my comments, in the introduction to this study, on Fukuyama and his positive take on liberal Democracy.

This focus on the act of voting – in which equality prevails only in the formal sense – helps to obscure the conditions of inequality reflected in existing asymmetrical power relations in society. Formal elections provide the important function of legitimating the rule of dominant elites, thus making it more difficult for popular movements to challenge the rule of elites. The claim that globalization furthers the spread of Democracy in the world is based largely on a narrow, formal-procedural understanding of “democracy.”

Steger (Ibid) continues with some crucial analysis:

Neoliberal economic globalization and the strategic promotion of polyarchic regimes in the Third World are, therefore, two sides of the same ideological coin. They represent the systemic prerequisites for the legitimation of a full-blown world market. The promotion of polyarchy provides market globalists with the ideological opportunity to advance their neoliberal projects of economic restructuring in a language that ostensibly supports the “democratization” of the world.

No surprise then that in a previously encountered sentiment from Speth (2008:218) he commented that neoliberal ‘free-market’ government “is hobbled by an array of dysfunctional institutional arrangements, *beginning with the way presidents are elected*” (emphasis added). Steger has provided some strong grounds for scepticism about the electoral process. This concern is implicit in the quote from Chomsky that started the analysis of this sub-section, where he comments that there is really only one party in the USA, the Business party. McChesney (1999:11), in the introduction to *Profit over People*, puts it quite bluntly: “Democracy is permissible as long as the control of business is off-limits to popular deliberation or change, i.e. so long as it isn’t democracy”. Such ineffectiveness of the vote is one of the reasons identified by McChesney (Ibid) for neoliberalism being “the immediate and foremost enemy of genuine participatory democracy, not just in the United States but across the planet”.

Another reason identified by McChesney (1999:10) for neoliberal Democracy being the ‘enemy’ of participatory democracy has to do with the pernicious social (and as will be seen, ecological) impact of the former ‘thin’ version of Democracy. He explains that to be effective,

democracy requires that people feel a connection to their fellow citizens, and that this connection manifests itself through a variety of nonmarket organisations and institution groups, libraries, public schools, neighbourhood organisations, cooperatives, public meeting places, voluntary associations, and trade unions to provide ways for citizens to meet, communicate, and interact with their fellow citizens. Neoliberal democracy, with its notion of the market *über alles*, takes dead aim at this sector. Instead of citizens, it produces consumers. Instead of communities, it produces shopping malls. The net result is an atomised society of disengaged individuals who feel demoralised and socially powerless.

It is clear from the above explanation from McChesney that he views people as socially and politically malleable: put them in an environment suited to encourage participation between people, and such interaction is likely to occur. On the other hand, the latter neoliberal, Promethean environment of ACID is one where the corporate ‘free-market’ motive of profit-making turns physical environments into ones where individuals are forced to perpetuate corporate profit-making. McChesney draws clear attention to the social consequences of the prioritisation of the market in a neoliberal Democracy, but the ecological implications should be clear: consumers and shopping malls are symbols of the kinds of issues focused on in Chapters 1 and 2, and to an extent in Chapter 3 as well. This issue can be restated as the issue of ‘profit over people’, a concept that can be broadened to include ‘profit over the environment’ considering the ecological focus of this study.

As already seen in this sub-section, this is the title of Chomsky's 1999 book – *Profit over People*. In it, he writes (1999:132) that the “the most effective way to restrict democracy is to transfer decision making from the public arena to unaccountable institutions: kings and princes, priestly castes, military juntas, party dictatorships, or modern corporations. The decisions made by GE affect the general society substantially, but citizens play no role in them, as a matter of principle”. It is fitting that Chomsky uses as an example GE, one of the world's most influential and powerful players in the fossil-fuel industry. The fossil-fuel industry featured prominently in Chapter 2, with serious ecological consequences highlighted in Chapter 1. GE is one of a large number of corporations with more economic power (and therefore political power too, considering what has been revealed so far about the union of the economic and political arenas) than most countries in the world, which can be seen in the following excerpt from Steger (2009:120), who is again highlighting information offered by Nadar:

...of the top one hundred economic entities in the world, fifty-two are corporations and only forty-eight are countries. Moreover, the gross annual sales of such huge TNCs as General Motors exceed the gross domestic product of countries such as Norway, South Africa, and Saudi Arabia.²⁹⁹ Shaping the globalization of commerce and finance in an authoritarian fashion, these transnational companies contribute to a widening “democracy gap” between ordinary people and their political institutions.

Steger (Ibid) turns to Nadar's explanation of how the widening of the ‘Democracy gap’ occurs:

The global corporatists preach a model of economic growth that rests on the flows of trade and finance between nations dominated by the giant multinationals – drugs, tobacco, oil, banking, and other services. The global corporate model is premised on the concentration of power over markets, governments, mass media, patent monopolies over critical drugs and seeds, the workplace and corporate culture. All these and other power concentrates, homogenize the globe and undermine democratic processes and their benefits.

‘Homogenisation of the globe’ is a useful term to use when considering not only the social and political impact of the domination of the ‘free-market’ neoliberal Capitalist economic system, but also its ecological impact. Democracy in its idealised form is undermined, as has been shown at length in this sub-section, but so is the ecology of the planet, as seen in previous chapters. So when Chomsky (1999:132) says that the “‘corporatization of America’ during the past century has been an attack on democracy”, one can legitimately add that it has been an attack on the ecologies of the planet as well; i.e. an attack on nature. Remember here that the ‘Democratic’ system of the USA as a symbol for the kind of ‘democracy’ that has swept the planet has already been discussed at the start of the sub-section; what is said about the USA is relevant the world over. Chomsky (Ibid) continues with relevant information regarding the issue of what prevents social change: the “so-called ‘free-trade agreements’ are one such device of undermining democracy. They are designed to transfer decision making about people's lives and aspirations into the hands of private tyrannies that operate in secret and without public supervision and control”. It follows that secret operations (whether in the corporate or political worlds; worlds that, based on the analysis in this sub-section, are really indistinguishable), in which decisions are made that affect the lives of millions, cannot be accessed by masses of people who would otherwise participate in a deep democracy (as opposed to ‘thin’ Democracy focused on in this sub-section), and social change is thus prevented.

299 More recent information about this is found in Oxfam's 2017 report called ‘An economy for the 99%’: “Big businesses did well in 2015/16: profits are high and the world's 10 biggest corporations together have revenue greater than that of the government revenue of 180 countries combined”.

4.4 One-dimensionality

In *One-Dimensional Man* (1964), Herbert Marcuse offers a powerful analysis of the attitudes and ideology of what he consistently calls “advanced industrial society” (1964:7), an appellation strikingly similar to the one used by Hoyer and Kvaloy (which I focused on in Chapter 3), namely advanced competitive industrial dominion (ACID), which I have expanded to denote *advanced competitive consumer Capitalist industrial Democratic dominion*. Parts of Marcuse’s analysis explicitly provide answers to the question of what blocks social change in such a society (which is contemporary globalised society) – indeed, Marcuse writes, “[c]ontemporary society seems to be capable of containing social change – qualitative change which would establish essentially different institutions, a new direction of the productive process, new modes of human existence” (1964:9). In fact, he opens the introduction to the text with the following telling rhetorical question and remarks:

Does not the threat of an atomic catastrophe which could wipe out the human race also serve to protect the very forces which perpetuate this danger? The efforts to prevent such a catastrophe overshadow the search for its potential causes in contemporary industrial society. These causes remain unidentified, unexposed, unattacked by the public because they recede before the all too obvious threat from without – to the West from the East, to the East from the West. Equally obvious is the need for being prepared, for living on the blink, for facing the challenge. We submit to the peaceful production of the means of destruction, to the perfection of waste, to being educated for a defense which deforms the defenders and that which they defend. (1964:7).

Nuclear weapons are unambiguously Promethean, the character of which was discussed in Chapter 3. Without using the word 'Promethean', Marcuse does indeed focus on such a character of Technology (which cannot be considered in isolation from the kind of Science that gave rise to it): “Technical progress, extended to a whole system of domination and coordination, creates forms of life (and of power) which appear to reconcile the forces opposing the system and to defeat or refute all protest in the name of the historical prospects of freedom from toil and domination” (1964:9). This 'reconciliation' of the 'forces opposing the system' is one of the processes by which 'one-dimensionality' in advanced industrial society is created; Marcuse (1964:10) explains that in, for example, nineteenth century Europe (prior to advanced industrial society), the

...category 'society' itself expressed the acute conflict between the social and political sphere – society as antagonistic to the state. Similarly, 'individual,' 'class,' 'private,' 'family' denoted spheres and forces not yet integrated with the established conditions – spheres of tension and contradiction. With the growing integration of industrial society, these categories are losing their critical connotation, and tend to become descriptive, deceptive, or operational terms (1964:10).

These concerns raised by Marcuse resonate with some identified in the sub-section on the dangers of Democracy: there it was explained that the continuous 'Democratic' changing of political representatives or parties 'from power' distracts from the fact that, over time, such a political system becomes an entrenched platform that itself does not change much. He focuses on the historically later spread of the platform, which after Mill’s time became inextricably entangled with fossil-fuel Technology and the kind of Science that spread it, and on the ‘monotonising’ impact it has on various “spheres and forces” (as quoted above) of society.

Marcuse is specific about the character of the type of attitudes and paradigms developing out of the growth of advanced industrial society. In the above quote (1964:10) he uses the words “descriptive” and “operational” in a sense that is coterminous with the concerns raised in Chapter 3 about the

reductionist character of Promethean attitudes. He quotes P.W. Bridgman on what is denoted by 'operational': "in general, we mean by any concept nothing more than a set of operations; the concept is synonymous with the corresponding set of operations" (1964:20); and:

To adopt the operational point of view involves much more than a mere restriction of the sense in which we understand 'concept,' but means a far-reaching change in all our habits³⁰⁰ of thought, in that we shall no longer permit ourselves to use as tools in our thinking concepts of which we cannot give an adequate account in terms of operations. (1964:21)

Again, these points correspond perfectly with the character of 'the Promethean' (especially the reductionist and quantitative characteristics) as described in Chapter 3, and it becomes clear that when Marcuse describes contemporary society as an advanced industrial one, he is referring to a society where the Promethean (as discussed in Chapter 3) has become ubiquitous: He writes (1964:12):

As the project [of advanced industrial society] unfolds, it shapes the entire universe of discourse and action, intellectual and material culture. In the medium of technology, culture, politics, and the economy merge into an omnipresent system which swallows up or repulses all alternatives. The productivity and growth potential of this system stabilize the society and contain technical progress within the framework of domination. Technological rationality has become political rationality.

Note the phrase 'omnipresent system which swallows up or repulses all alternatives' – the 'repulsion of alternatives' is synonymous with 'the prevention of change', which is the focus of this chapter. Also note – and this is crucial – that Marcuse uses the word 'domination', which has been identified in this study as a central Promethean trait. Furthermore, his use of the word 'rationality' is here associated with the realm of 'the operational', and resonates well with Horkheimer's description of 'instrumental reason' as discussed in Chapter 3. Marcuse (1964:18) is very specific about the consequences of the ubiquity of this kind of 'Rationality' or 'Reason':

We are again confronted with one of the most vexing aspects of advanced industrial civilization: the rational character of its irrationality. Its productivity and efficiency, its capacity to increase and spread comforts, to turn waste into need, and destruction into construction, the extent to which this civilization transforms the object world into an extension of man's mind and body makes the very notion of alienation questionable. The people recognize themselves in their commodities; they find their soul in their automobile, hi-fi set, split-level home, kitchen equipment. The very mechanism which ties the individual to his society has changed, and social control is anchored in the new needs which it has produced. The prevailing forms of social control are technological in a new sense.

The increase and the spread of comforts, the turning of waste into need, the transformation of destruction into construction, the recognising of one's self in commodities (i.e. *consumerism*) – these all obviously play important parts as 'material' causes of the ecological crisis. Marcuse, however, as has already been detailed in this sub-section, has shown that these 'material' causes are consequences of the infiltration of 'technical rationality', of operational and instrumental perception, into political and social spheres: "As a technological universe, advanced industrial society is a political universe, the latest stage in the realization of a specific historical project – namely, the experience, transformation, and organization of nature as the mere stuff of domination" (1964:11). The character of this 'stage' is therefore explicitly Promethean.

300 This word – *habit* – is important because later on in the study the concept of *habitualised perception* is foregrounded – see Chapter 7, sub-section 7.3.1.5.

In typical (and, I must add, entirely appropriate) Marxist style, Marcuse (1964:11) identifies the Technological means of production (the 'base' of society) as that which determines superstructural elements: he does so in a way that raises the important issues of totalitarianism and social control:

In this society, the productive apparatus tends to become totalitarian to the extent to which it determines not only the socially needed occupations, skills, and attitudes, but also individual needs and aspirations. It thus obliterates the opposition between the private and public existence, between individual and social needs. Technology serves to institute new, more effective, and more pleasant forms of social control and social cohesion.³⁰¹

Continuing his line of thought, Marcuse (1964:14) later uses the term 'totalitarian' again to denote the “economic-technical coordination which operates through the manipulation of needs by vested interests” which “precludes the emergence of an effective opposition against the whole”. This, at least, goes some way to answering the question of what blocks social change – individual resistance gives way to the imperatives of the system as the Promethean, over decades and generations, rhizomatically infiltrates all aspects of the socio-political and economic spheres. This is why he says that a

...comfortable, smooth, reasonable, democratic unfreedom prevails in advanced industrial civilization, a token of technical progress. Indeed, what could be more rational than the suppression of individuality in the mechanization of socially necessary but painful performances; the concentration of individual enterprises in more effective, more productive corporations; the regulation of free competition among unequally equipped economic subjects; the curtailment of prerogatives and national sovereignties which impede the international organization of resources. (1964:13)

It seems fitting that such a concern is raised about Democracy considering what was discussed in the sub-section of this chapter on 'The tyranny of the majority'. J.S. Mill, writing a century before Marcuse, was exposed to the early industrial apparatus and glimpsed something of its attitudinal impact on the people that constitute society. Marcuse (1964:17) goes several steps further when he says the following about liberty, the central focus of Mill's 1859 text; the first half of the quote echoes some of Mill's concerns:

Under the rule of a repressive whole, liberty can be made into a powerful instrument of domination. The range of choice open to the individual is not the decisive factor in determining the degree of human freedom, but what can be chosen and what is chosen by the individual. ... Free election of masters does not abolish the masters or the slaves. Free choice among a wide variety of goods and services does not signify freedom if these goods and services sustain social controls over a life of toil and fear – that is, if they sustain alienation. And the spontaneous reproduction of superimposed needs by the individual does not establish autonomy; it only testifies to the efficacy of the controls.

Marcuse (1964:17) indeed provides a phrase that succinctly sums up Mill's concerns about the tyranny of the majority: “the transplantation of social into individual needs”. Mill's outline of the stages of the development of Democracy provide a broad historical background of how a point was eventually reached where public opinion could be easily manipulated. As discussed in the relevant sub-section, Mill saw the newspapers of his era as levelling out the playing fields of public opinion, and Marcuse echoes Mill's concerns when the former says in the context of the threat of nuclear

³⁰¹ Marcuse's conception of technology here clearly resonates with that of Heidegger, and as will be seen, with Deleuze's as well. In Deleuze's brief essay, “Postscript on societies of control”, what he says about control is very apposite, especially because he links it with economic control. See the following sub-section.

war (an extreme specific instance of the Technological base in general) that “our mass media have little difficulty in selling particular interests as those of all sensible men” (1964:7). Again, the effect of the media is raised in the following extract (Marcuse 1964:17-18) that explains succinctly, via very specific examples, the “the transplanted of social into individual needs”. Marcuse writes that it

...is so effective that the difference between them [i.e. social and individual needs] seems to be purely theoretical. Can one really distinguish between the mass media as instruments of information and entertainment, and as agents of manipulation and indoctrination? Between the automobile as nuisance and as convenience? Between the horrors and the comforts of functional architecture? Between the work for national defense and the work for corporate gain? Between the private pleasure and the commercial and political utility involved in increasing the birth rate?”

The short answer is no; Marcuse (1964:20) provides the insightful details:

The productive apparatus and the goods and services which it produces “sell” or impose the social system as a whole. The means of mass transportation and communication, the commodities of lodging, food, and clothing, the irresistible output of the entertainment and information industry carry with them prescribed attitudes and habits, certain intellectual and emotional reactions which bind the consumers more or less pleasantly to the producers and, through the latter, to the whole. The products indoctrinate and manipulate; they promote a false consciousness which is immune against its falsehood.

He then (1964:20) explicitly mentions how the establishment of such a 'way of life' prevents social change:

And as these beneficial products become available to more individuals in more social classes, the indoctrination they carry ceases to be publicity; it becomes a way of life. It is a good way of life - much better than before - and as a good way of life, it militates against qualitative change. Thus emerges a pattern of one-dimensional thought and behaviour in which ideas, aspirations, and objectives that, by their content, transcend the established universe of discourse and action are either repelled or reduced to terms of this universe. They are redefined by the rationality of the given system and of its quantitative extension.

The 'quantitative extension' has been shown in Chapter 3 to be a primary Promethean characteristic, one that is epitomised in what one may safely refer to as advanced *Capitalist* industrial society. Capitalism's exclusive focus on the quantitative was explored in Chapter 3, and in Chapter 2 Capitalism's debt-based monetary system was shown to be the mechanism by which the drive for endless growth is perpetuated at the expense of the natural world. Marcuse's following remark (1964:7), which will be offered as a telling conclusion to this section, has therefore been provided with extensive background. He is writing in the context of the dangers of nuclear war, which, one must be reminded, is a specific example of the Technological base of society in general: “we are immediately confronted with the fact that advanced industrial society becomes richer, bigger, and better as it perpetuates the danger”. Capitalist growth, both economically and physically, cannot be left out of the equation – all that was explored about it in Chapter 3 therefore ties in as important aspects of 'one-dimensionality'.

4.5 Societies of Control

In his essay, 'Postscript on Societies of Control', Gilles Deleuze offers an analysis of two phases of Western society; it is an analysis that contains very useful insights regarding the question of what prevents change in a social system where human action is widely acknowledged to be steering the planet's collective ecosystems into critical conditions (see Chapters 1 and 2 in this regard). The two phases of Western society Deleuze identifies are disciplinary and control societies, the latter being the contemporary phase that emerged from the former. Disciplinary societies, prevalent in the eighteenth, nineteenth, and early twentieth centuries, are ones where (as the name suggests) disciplinary institutions play the major role in conditioning and coercing members of the public into subservience to authority – subservience to authority is the unquestioned status quo³⁰². Several examples of such disciplinary institutions, as well as the chronology of one's transition through them, are offered by Deleuze (1995:177): "first of all the family, then school ('you're not at home, you know'), then the barracks ('you're not at school, you know'), then the factory, hospital from time to time, maybe prison". Deleuze (Ibid) points out that each institution has its "own laws", and that each serves the same basic purpose: "bringing everything together, giving each thing its place, organizing time, setting up in this space-time a force of production greater than the sum of component forces". These are simple but powerful and relevant observations by Deleuze: the fact that he identifies the family unit (which was undeniably exclusively patriarchal in the aforementioned centuries, which speaks for the Promethean 'flavour' of the family unit) as a starting point for the 'acceptance' of the authority of disciplinary institutions is important, because at such a young age children are susceptible and vulnerable, learning in their early years much about the world from their parents, who themselves are/were often conditioned to accept the authority of disciplinary establishments without question. The child then goes to school, and thereafter (if male) the army, then the factory; males and females are exposed to hospitals and are (at least) aware of the existence and threat of prisons. Deleuze (1995:179) points out that transitions between phases always involves "starting from zero", which means the repetition of having to learn new rules, expectations, and ways of behaving. The essential ingredients for the prevention of change in disciplinary societies have therefore already been identified: the 'acceptance' of authority, conditioned into being a docile individual from a very early age, as well as the frequent adaptation to 'the next' form of disciplinary organisation, keeps the individual checking their actions against the dictates of the various disciplinary institutions that constitute(d) society. People moving chronologically through this collection of disciplinary units are unlikely to incite social change because their conditioning makes them subservient to 'the system', a system that itself requires subservient citizens for its perpetuation.

After briefly describing facets of disciplinary societies, Deleuze (1995:178) observes that disciplinary "sites of confinement" are breaking down, and that "societies of control" are gradually replacing them. In a control society, "businesses take over from factories" (1995:179), and in such corporate contexts, marketing "is now the instrument of social control and produces the arrogant breed who are our masters". Whereas in disciplinary societies one is always "starting again all over again" (Ibid), in control societies "you never finish anything" (Ibid), and Deleuze invokes the atmosphere of the white-collar workplace where employees are endlessly involved in "challenges, competitions and

³⁰² This is not a simple matter of 'accepting authority'; for Foucault, discipline is inscribed on the body, which is reduced to docility via various disciplinary mechanisms, such as hierarchical observation and normalizing judgment. See <https://plato.stanford.edu/entries/foucault/> accessed 31 January 2017.

seminars” (Ibid). The comparison is accordingly made between a game show and a corporation: “If the stupidest TV game shows are so successful, it’s because they’re a perfect reflection of the way businesses are run” (Ibid). People in such an environment do not need the threat of a disciplinarian in order to achieve the goals of their corporate ‘masters’, namely profit and perpetuation of the means by which profit is secured (see sub-sections 2.9 and 3.5 for details). Instead, they work to reinforce corporate Capitalist ideology because, since young ages, they have watched items like game shows on television, been part of school systems where “continuous assessment” is employed (Ibid), and experienced parents and friends opposed as ‘dividuals’ (to employ a Deleuzian term) against one another (i.e. competing) as per the Capitalist agenda of their control society:

...businesses are constantly introducing an inexorable rivalry presented as healthy competition³⁰³, a wonderful motivation that sets individuals against one another and sets itself up in each of them, dividing each within himself. Even the state education system has been looking at the principle of ‘getting paid for results’: in fact, just as businesses are replacing factories, *school* is being replaced by *continuing education* and exams by continuous assessment. It’s the surest way of turning education into a business. (Ibid)

The outcome is that people/employees/pupils implicitly learn and internalise control mechanisms, perpetuating the mechanisms themselves, as well as the problematic ecological impacts of the control society (because the contemporary control society happens to be an Advanced Industrial Society, whose ecological impacts have been seen at various stages of this study).

The question of what prevents social change can also be approached by considering the ‘manufacturing’ context of a control society. Disciplinary societies were focused on production, while

...capitalism in its present form is no longer directed toward production, which is often transferred to remote parts of the Third World... It’s directed towards metaproduction. It no longer buys raw materials and no longer sells finished products; it buys finished products or assembles them from parts. What it seeks to sell is services, and what it seeks to buy, activities. It’s a capitalism no longer directed toward production but toward products, that is, toward sales or markets. (1995:181)

Finished products are neatly packaged, conveniently detached from the polluting 'aura' of industrial processes that are required to make them; members of corporations who often have the task of “assembling finished products” (Ibid) therefore do not necessarily see the impact of advanced industrial processes on the environment. As insinuated in Deleuze’s game-show remark already encountered, it can be said of corporation employees that they ‘play the game’, i.e. they function according to their ‘training’, a training that occurs in the context of the control society so far described. Consumers of the neatly packaged end products (i.e. fully assembled finished products) see even less of the direct negative ecological impacts of industry. In pointing out that Capitalism’s focus on “products” in control society is somewhat coterminous with its focus on “sales or markets” (Ibid), Deleuze is indirectly alluding to the debt-based monetary economy at the heart of the contemporary Promethean dispensation that is Capitalism. Indeed, Deleuze later (1995:181) makes a direct comment on this facet of control society when he points out a difference between a disciplinary society and a control society: “man is no longer a man confined but a man in debt”. He

303 Note the use of the word ‘competition’ here, and the fact that it features in Hoyer’s ‘un-tampered’ with version of ACID – advanced competitive industrial dominion. I have, as explained already, expanded ACID to denote advanced competitive consumer Capitalist industrial democratic dominion.

notes (1995:180) that money is symbolic of the change of methods of control between the two types of society: the one uses a gold standard, while the other uses rates of exchange, i.e. markets³⁰⁴:

Money, perhaps, best expresses the difference between the two kinds of society, since discipline was always related to molded [sic] currencies containing gold as a numerical standard, whereas control is based on floating exchange rates, modulations depending on a code setting sample percentages for various currencies.

It has already been seen in previous sub-sections that rates of ecological deterioration accelerated exponentially as the money supply increased, and as was also discussed in those sections, money *is* debt. So in focusing on the operation of markets as instruments of social control, Deleuze is indirectly identifying (partly) the money/debt relationship as one that prevents social change. Deleuze goes on to employ some interesting symbols to illustrate the change between disciplinary and control societies:

If money's old moles are the animals you get in places of confinement, then control societies have their snakes. We've gone from one animal to the other, from moles to snakes, not just in the system we live under but in the way we live and in our relationships with other people too. Disciplinary man produced energy in discreet amounts, while control man undulates, moving among a continuous range of different orbits. *Surfing* has taken over from all the old *sports*.

So when people are involved with "challenges, competitions and seminars" (1995:179) that partly constitute the working world for most Capitalist employees, they in a sense themselves 'play the game' according to the 'fluid' (hence "surfing") corporate and Business imperatives of the system (often with a disciplinarian explicitly instructing them) rather than according to the institutionally specific disciplinary mechanisms to which they are subject – this has already been discussed in this sub-section. Even more 'fluid' is the movement of digital, debt-based money on the stock exchange and between the Reserve banks of the world and the state-endorsed banks that loan out the money for interest, a kind of digital surfing that affects the lives of the vast majority of the people on the planet, people who are conditioned (by, for example, the flow of money in the system) in their control society to perpetuate ecologically-problematic actions.

In the course of Deleuze's short analysis, he briefly mentions three industries as examples of those particular to control societies: "pharmaceutical productions", "nuclear technology" and "genetic engineering" (1995:178). The lattermost of these industries, in the form of Genetically Modified Organism (GMO) engineering, was explored in Chapter 2; its *modus operandi* is similar to that of the first two example industries just mentioned. Considering that the GMO industry was listed in that chapter as the eighth of various industries with disastrous consequences for the overall ecology of the planet, it seems reasonable to suggest that all of the industries explored in Chapter 2 are structural systemic 'players' in the broader Advanced Industrial 'free-market' neoliberal Capitalist control society. This is to say that all the relevant industries perpetuate control mechanisms in similar ways to that of the GMO industry, or as Deleuze (*Ibid*) puts it, they "play their part in the new

304 I have footnoted this point elsewhere but it is worth repeating here: While broadly on the question of 'what prevents social change?', it is interesting to note that the use of the word 'market' in phrases such as 'market economics' instead of 'Capitalist economics' has the impact of preventing social change, as explained by John Kenneth Galbraith (quoted in Foster, Clark and York 2010:31): "When capitalism, the historical reference, ceased to be acceptable, the system was renamed. The new term was benign but without meaning.... In reasonably learned expression there came "the market system." There was no adverse history here, in fact no history at all. It would have been hard, indeed, to find a more meaningless designation – this is a reason for the choice.... So it is of the market system we teach the young. It is this, as I've said, that sophisticated political leaders, compatible journalists and many scholars speak. No individual or firm is dominant. No economic power is evoked. There is nothing here from Marx or Engels. There is only the impersonal market, a not wholly innocent fraud".

process” of control. Appropriately, these industries do conform to the characteristic of ‘fluidity’ identified by Deleuze when he uses the word “surfing”. Consider all of the industries discussed in Chapter 2: the fossil-fuel industry, the petrochemical industry, the agricultural industry, the construction industry, the mining industry, the meat and fish industries, the ‘bio-tech’ industry (genetic engineering), and the fractional reserve money industry. These industries have ‘developed’ either through the transition from disciplinary to control society, or have arisen after the transition, as in the case of the GMO industry, and Deleuze (Ibid) illustrates how this process unfolds via the change from (for example) the hospital (disciplinary) to various other forms of control:

It’s not a question of asking whether the old or new system is harsher or more bearable, because there’s conflict in each between the ways they free and enslave us. With the breakdown of the hospital as a site of confinement, for instance, community psychiatry, day hospitals, and home care initially presented new freedoms, while at the same time contributing to mechanisms of control as rigorous as the harshest confinement.

The hospital was clearly a mechanism of disciplinary society, and in control society it becomes more fluid, as per Deleuze’s explanation. The same can be said for any of the industries under scrutiny in Chapter 2: a random example is the mining industry, where in a disciplinary society the owners of the means of production explicitly act as authoritarians who ‘call the shots’ by applying the micro-disciplinary mechanisms (such as strict, explicit instructions for handling mining equipment) that induce discipline in workers. By contrast, in a control society many layers of (for example) management have been added to the corporate Capitalist dispensation so that there is more administrative control from various departments throughout the mining industry that ‘play the corporate game’ as per the earlier discussion in this chapter about employee “challenges, competitions and seminars” (1995:179). As was discussed earlier, such Business and corporate ‘layers’ are added to distance employees from the industrial ‘production’ towards dealing with ‘products’ and ‘sales’ instead: “The sales department becomes a business centre or ‘soul’” (1995:181). Another compatible example would be the neoliberal focus on protecting the interests of corporate investors (relevant to *all* the industries under the spotlight in Chapter 2), which again adds another ‘layer’ of control rather than a sense of direct, institutional ‘disciplinary’ ownership. The latter is quantifiable in a ‘solid-state’ form, i.e. ‘the owners’, while the former is fluid in the sense that investors are quantifiable as holders of company shares on an ever-changing stock exchange, whose fluctuating fortunes indirectly affect the lives of millions of people.

The focus on the various industries above can be ‘grounded’ with a more concrete (if somewhat ‘extreme’) example of how ‘dividuals’ in a control society are forced to subscribe to certain control mechanisms (i.e. forced to ‘play the game’) in ACID and thereby perpetuate the ecological crisis, unable to instigate social change. Deleuze (1995:181-182) refers to the scenario described by his associate Felix Guatarri, where an electronic card is used by an individual to open barriers out of an apartment, street, and neighbourhood. The same card, however, can also be used to bar entry back into relevant areas. Deleuze points out that the barrier is less the mechanism of control than the computer: control “doesn’t depend on the barrier but on the computer that is making sure that everyone is in a permissible place, and effecting a universal modulation” (1995:182) – this is obviously a Promethean use of Technology. One needs merely to think of the ubiquitous roles played by computers in ACID – needless to say, computers have pervaded all aspects of life in the system, and Deleuze (via Guatarri) offers a stark reminder that the underlying Promethean character of Technology is something with immense powers of social control. It is true that computer

Technology has, in the specific form of the internet, allowed for dissemination of information to groups of people all over the world who previously were left disempowered by exclusion from communication networks. However, such a positive aspect is surely outweighed by the widespread use of computers in a predominantly corporate, market-based economy, where employees sit everyday behind their computing machines to (mostly) perpetuate the industries that have such problematic ecological consequences – Hardt and Negri give the internet some credit in *Empire* (2000:299), while also pointing to its double-edged use (2000:300), but on the whole, it has promoted the interests of Capitalism, as Castells’s analysis (in *The Rise of the Network Society*, 2010) of its role in promoting the currently dominant ‘space of flows’, which is the basis of present Capitalist expansion, shows³⁰⁵. Change in such a society is by and large change from an old model of a computer to the next, newer model. The role of system-perpetuation stays the same – the already-encountered comment from Deleuze stands out again here: “Marketing is now the instrument of social control and produces the arrogant breed who are our masters” (1995:181). And when computer Technology is used as a tool to affect some kind of social change, ‘the barriers come down’ (to employ the language of Guatarri’s illustration above) on those using Technology in such a way, as was seen in the Occupy Movement on January 3rd 2012 when six people were arrested for facilitating the broadcast of the protests against the USA’s National Defence Authorisation Act³⁰⁶. Instead, potentially ‘revolutionary’ tools of social networking are incorporated as control mechanisms whereby users become accustomed to the act of pushing a button to ‘like’ someone else’s Facebook post, ‘surfing’ over to another person’s profile and making a brief comment on a friend’s digital ‘wall’, or ‘surfing’ to another webpage to sign an e-petition. These activities are all fitting for a society conditioned to ‘accept’ political action as something constituted by placing a mark on a piece of paper in an election (see section 4.3, Democracy in a ‘free-market’ neoliberal Capitalist system).

4.6 Princen's 'traffic control measures'

Thomas Princen, in *Treading softly: paths to ecological order* (2010) elaborates on eight instrumental factors that prevent change from neoliberal ‘free-market’ Capitalist systems of Advanced Industrial Society. Princen (2010:29–58) calls these factors “traffic control measures”, a catchy euphemism denoting frequently encountered attitudinal and ideological beliefs about the world, specifically the consumer-Capitalist economy that has had decisive global influence for decades. These are beliefs and ideas, says Princen (2010:30), that belong to defenders “of the familiar; builders who stack yet more cards on top [of an already flimsy house of cards], ignoring [the cards’] origins, boosters who see great promise ahead in high-tech innovation and freewheeling markets, discounting who wins and who loses: these are the people who do not like to talk about a different path”. The resonance of Princen’s sentiments with various topics already discussed in this study so far should be clear: the view that ACID (the proverbial house of cards in Princen’s analogy) is precariously positioned due to issues of sustainability in the context of the ecological crisis, as broadly explored in Chapters 1 and 2; the Promethean characteristics explored in Chapter 3 of, first, (Promethean) Technology as the

305 See Olivier’s Thoughtleader article “The ‘space of flows’ and the social elites of today” at thoughtleader.co.za/bertolivier/2013/04/21/the-space-of-flows-and-the-social-elites-of-today/ accessed 31 January 2017.

306 <http://www.thewire.com/national/2012/01/occupy-wall-streets-livestream-operators-arrested/46921/> accessed March 16 2015.

ultimate tool for tackling all problems, second, the focus on ‘the quantitative’ epitomised by the neoliberal ‘free-market’, and third, the competitive *modus operandi* of Capitalism; and “those who do not like to talk about a different path” is clearly a reference to attitudes that *resist social change* – such resistance is the focus of this chapter.

The first traffic control measure, says Princen (2010:32), is the view that goes as follows: “I know we’re consuming too much. We’ve got to cut back. But if we do, it’ll hurt the economy. So how do we consume less without hurting the economy?” Princen is paraphrasing from a very contemporary context, specifically a context where ecological issues have been acknowledged globally by various corporate and political entities, but also one where consumption trends and ecological degradation continue to rise at often exponential rates (see Chapters 1 and 2). The logic behind this traffic control measure is that the economy as it is *requires* not only huge levels of consumption of resources, but also *continuously increasing* rates thereof in the typical Capitalist sense (see sub-section 3.5). The problem is therefore that consumption cannot slow down *overall* in such a model, because the economy, requiring increasing rates of consumption, will begin to collapse if rates of consumption were to level off, never mind decrease. Princen (Ibid) admits that the potential collapse of this kind of economy is “real and worrisome” by itself (which is a criticism of the system under scrutiny rather than a criticism of decreasing consumption), but more importantly he points out that “this position presumes that nothing we are doing now might hurt the economy”. He adds, “the question – how do we consume less without hurting the economy? – presumes that the economy itself is doing just fine, that when there are problems, such as a recession, what’s needed is a bit of stimulus here, some productivity gains there, and it’ll keep on doing what it is so good at doing – growing, providing jobs, generating a return on investments”. Princen immediately points out the problem with such a position:

Here is the paradox: the economy depends on increasing consumption, but ever-increasing consumption strains ecosystems, both resources (soil and water, for instance) and waste sinks (the oceans and atmosphere). Before tackling this paradox head-on, let’s turn the above question of consuming less on its head. A system that grows endlessly crashes. Think of cancer cells, debt-ridden mortgages, fisheries. It defies logic, not to mention a few well-known laws of physics (like thermodynamics), to presume that with continuing growth in consumption, that is, continuing growth in the total throughput of material and energy through our economy—the current economy will not crash.

This cancer analogy drawn by Princen was encountered in Chapter 3, where I focused on Kovel’s comparison of Capitalism to a cancer. After making this explicit reference to the link between consumer Capitalism and ecological degradation, Princen (2010:32-33) continues by stating that when the question is “turned on its head”, the “burden of proof shifts” – the defenders of the consumer Capitalist status quo are the ones who have to explain how the consumer Capitalist status quo can continue indefinitely. Princen (Ibid) quickly points out that the “defenders of endless growth” can provide no such proof, so instead they call for faith based on “extrapolations from the past – historically speaking, a very recent past, just a hundred years or so, a past with abundant, cheap and readily controlled fossil-fuels, especially oil”. Princen is pointing out that the ‘reality’ is quite different from such a ‘fictional’, extrapolated view of the world, and notes (2010:33) that the real issues are ones coterminous with those focused on in Chapter 1 of this study, issues such as unsustainable water use, fertile soil loss, and climate instability. Princen (2010:35) later touches on the role of language in the context of the dominant ideology of neoliberal economic prioritisation:

Part of what is at issue here is language – not just words and phrases, but perceptions and actions. It is through language that we understand our world and enact our world, including abstractions like “the economy” and “consumption.” When people speak of the economy as if it is an organism, all of us cannot help but think of the economy as being natural, a real living being. This way of thinking is typified by attitudes that now constitute the conventional wisdom: A growing economy is a strong, healthy economy. A weak economy is anemic, lethargic. It needs a stimulus. It must be revived.

Of course, as Princen (2010:36) notes, if the ‘organic’ metaphor for the economy is considered further, it is clear that nothing organic lasts forever, but that this aspect of the organic metaphor for the economy is always absent in the ‘conventional wisdom’ of the dominant Capitalist order. Princen (Ibid) is confident that this order “*cannot continue*. It is not sustainable”.

The second traffic control measure is encapsulated by the phrase “Gotta move forward” (2010:39); rhetoric, explains Princen, that diverts people’s attention: it “deflects real action. It lets off the hook those who have written the rules of the game – the game of endless extraction and consumption – and who themselves have profited so handsomely from that game. And it perpetuates that very same game, only with a green gloss”. Note immediately the phrase “perpetuates that very same game”, a phrase denoting the same thing as ‘preventing change’, which is the focus of this chapter. This phrase, “Gotta move forward”, is “the quintessential rhetorical expression of progress” (2010:40), the kind of Promethean ‘progress’ that gave rise to, and grew alongside, the Technological, Scientific and industrial paradigm discussed in Chapter 3. Politicians and Capitalists alike can admit that the corporate Capitalist state has engaged in ecologically and socially problematic activities, but then immediately state that it is no use ‘dwelling on the past’, and instead insist that society at large must simply ‘move forward’. The forward movement, however, is “on the same path, of course. No mention of other paths. No questioning whether this path or this mountain is the right one” (Ibid). The widespread use and acceptance of this rhetoric in neoliberal society clearly promotes adherence to the dominant (Promethean) socio-economic and political order. It is partly why conversation in the mainstream about ‘alternatives’ to problematic systemic mechanisms often result in defenders of the status quo stating that ‘there is no alternative,’ the acronym for which is TINA³⁰⁷. “Gotta move forward” is the language of progressives, says Princen (Ibid), “in a society dedicated to progress, to seeing bounteous plenty in the future and backward misery in the past. It is a useful rhetorical tool for painting opponents... as anti-progress, as ne’er-do-wells acting against all that makes modern life good”.

Princen (2010:41) states unambiguously that one must, “whenever the term [‘gotta move forward’] is used, assume, until proven otherwise, that it is self-serving, self-justifying, and manipulative. It cannot, needless to say, be a basis for getting on a sustainable path”. This warning is applicable, furthermore, to the reasoning used by defenders of the consumer-Capitalist status quo, specifically the reasoning that constitutes the traffic control measure that Princen (Ibid) calls, simply, ‘externalities’³⁰⁸. Externalities are the problems such as “litter, erosion, global warming, and all that” progressives claim can be dealt with only by further commitment to the path of economic and Technological expansion as per the neoliberal Capitalist paradigm (think of the industries discussed in Chapter 2) that has been shown to be instrumental in causing the ecological crisis in the first place. When critics question this paradigm, a “fear card” (2010:42) is played by progressives and any

307 I address this notion, that there is no alternative, in sub-section 5.10.

308 In Chapter 5, sub-section 5.6, I refer to externalities by way of some of the work of Charles Eisenstein.

calls for alternatives to Capitalist free-market consumerism are painted as threats that could collapse the precarious economy. Says Princen (Ibid): “The fear card makes it difficult to have a conversation about the core elements of this wondrous economy, this economy that is simultaneously a powerhouse and a weakling, that is rife with so many ‘externalities’ that one wonders if they are not actually ‘internalities’, outputs *inherent* in this political economy”.

The fourth traffic control measure is the notion that “consumers rule” (Princen 2010:44-45). The theory is that consumers determine the ‘properties’ of the economy, that “consumers make their own conditions, that they are autonomous, fully informed individuals who drive production through their market decisions”. Princen (Ibid) continues to explain that this theory started out as a useful “analytical tool” but later became established as a market principle. The reasoning behind the principle is that if consumers choose not to buy a specific product, then producers will be forced to stop making the product. So if a product is ecologically unsustainable, it is up to the consumer to stop purchasing it rather than being the producer’s responsibility to take responsible ecological action. Princen (2010:44) explains that the problem here is that those

who wish to expand markets continuously, those who have an abiding faith that consumption can and should expand indefinitely, get a free ride: when things go wrong, when the rich get richer, when the “externalities” are no longer trivial (e.g., greenhouse gases, persistent toxics, disappearing soil), when life-support systems around the world are disrupted (e.g., climate, freshwater), the expanders can blame “the consumer.” After all, the consumer rules.

The notion that ‘consumers rule’ is often accompanied by traffic control measure number five: the claim that ‘technologies save’³⁰⁹. Princen (2010:46) explains that this notion rests on the (Promethean) historical foundation of the concept of efficiency, which was originally applied to machines in order to decrease the amount of energy needed to achieve the same (or better) ends. Frederick Winslow Taylor, however, took the concept of efficiency and applied it “not just to machines but to people (i.e. workers) who run machines”. Princen (Ibid) continues to explain the impact on society of the spreading concept of efficiency:

Efficiency, so successful in the workplace, soon seeped out of the factory to infuse government, land management, schooling, even worship. An “efficiency craze” took over early twentieth-century America. A simple idea, a handy means of improving production, became a goal in its own right. As such, people lost sight of why efficiencies were useful. And into that political space stepped those who would use the concept for all sundry goals: increasing wages and controlling unionists; replanting forests and clear-cutting forests; urging people to shop judiciously and to buy impulsively; creating a productive economy with an optimal distribution of resources and stimulating that very same economy to grow, and then grow some more, and more.

This invasive, insidious notion of efficiency as described by Princen above is well situated within the context of Promethean Technology as explored in Chapter 3. There it was clear that very specific historical trends – dominating nature, discovering and controlling the secrets of nature for the profit afforded via the discoverers – propelled Scientific, Technological and economic endeavours. Such endeavours laid the foundation for the widespread ‘advanced’ industrial Promethean attack on nature, and Princen’s observations about efficiency add to the understanding of how ecologically-problematic phenomena are rapidly accelerated. As he says (2010:46-47), efficiency is, “at root, and age-old commonsense idea”, but it became a means of disguising

309 I have addressed this notion extensively in sub-section 3.4.

and displacing full costs. It became a way of leading everyone to believe that society is marching forward, that we are all together on that endlessly productive, ever-ascending path. In fact, though, that path is eroding, its own material ground being eaten away by false beliefs in the beneficent rule of consumers and the come-to-the-rescue promise of new technologies. In the end, efficiency is a crutch, an excuse, a diversion. It is a handy guise for those who believe that perpetual industrial expansion on a finite planet is possible, indeed, that this economy is scientific, modern, consumer-driven, and just.

This dichotomy – that the increase of efficiency is a commonsense idea, versus the ecologically-problematic outcomes that accompany ‘efficiency gains’ (as described by Princen, above) – further explains why and how social change is prevented. It is hard to dismiss a seemingly commonsense idea, and unpopular in a Promethean context to criticise the well-established mantra (‘we must increase efficiency’), never mind go so far as to link efficiency-increase with widespread ecological degradation in a world where people are conditioned by social-political and economic powers to accept efficiency gains as a positive phenomenon.

Princen (2010:49) identifies a further four traffic control measures that prevent social change. They are all claims that support the view that ‘things will change’ only if certain conditions are met:

Things will change (1) only when there’s a crisis; (2) only when leaders muster the political will; (3) only when people are properly educated; and (4) only when people’s values change. These too are traffic control measures that... keep our thinking and our behavior and policies on that straight and narrow path, endlessly climbing, forever extracting, consuming, and discarding until the ground underneath crumbles away.

The first claim makes use of the word ‘crisis’, as does the title of this study, but in this study the word denotes a broad, interconnected web of ecological issues that are gradually being exposed and together do pose a looming threat to the future of life on the planet, whereas the traffic control measure in question can be considered one that uses the word ‘crisis’ as something more *immediately* life-threatening, like a fire. Certainly, action can and does occur when a crisis is in the midst, as in the case when a fire breaks out and neighbours work together to prevent a home from burning down. However, crises are not the only times that instigate change. Princen (2010:50) uses the example of slavery to dismiss the claim that a crisis is needed to facilitate social, political and/or economic change. Slavery was accepted as ‘normal’ for much of Western history, but was challenged by “a dozen shopkeepers and clergy... in 1787”. The details of how the abolitionists achieved the change are irrelevant here; the point is that the dominant classes in London at the time perceived no crisis. “Instead, a few people acquired new understandings, took a strong moral stance, and confronted power” (Princen 2010:51). The relevance of this example to the contemporary ecological situation is clear. The dominant upper-middle classes of neoliberal society are generally comfortable and indeed may not change until threatened by a crisis, and the fact that many people conditioned by consumer Capitalism believe that things will not change until there is a crisis may indeed prevent proactive steps towards change. But such factors do not logically *guarantee* that proactive social change will occur only when a crisis arises, as was the case with slavery.

The traffic control measure – that only a lack of political will is what prevents practical steps to any kind of social action aimed at the eco-crisis – is what Princen (2010:54) calls “the mother of all diversions”. He quotes Robert Chambers (Ibid) to explain: “lack of political will means that the rich and powerful have failed to act against their own interests”. Princen (2010:55) continues to quote Chambers in this regard: this

'lack of political will' lament 'is a way of averting eyes from the ugly facts' – ugly facts like who actually benefits from current patterns of over-consumption, and who actually loses, now and into the far future. Ugly facts like extreme wealth among thousands, abject poverty among billions. Ugly facts like extreme floods and fires, like disappearing rivers and groundwater, like grain and medicine shortages.

The section in this chapter (Chapter 4) entitled 'Democracy in a free-market neoliberal Capitalist system' contains an outline of the established 'marriage' of politics and Business. What is discussed in that section applies fully to this 'lack of political will' traffic control measure.

The final traffic control measures (Princen 2010:56-58) – “people must be educated” and “[t]heir values [must be] changed” – go hand-in-hand and are summarised by Princen (2010:56) as follows: “Education is the answer. We have to reach young people. Tell them what’s happening. Get them to see that we’re in trouble, big trouble. Society needs a total transformation in values. And that has to start with the young – in high school, grade school, even preschool!” Princen, as an educator himself, is sympathetic to this argument, but points out (Ibid) that teachers are generally not “aware and concerned and in positions of influence..., at least not on the issues that drive [Princen’s] book”. More importantly, teachers, says Princen (2010:57), are less influential on young people’s values than are parents, peers, and the media (in that order). Education, then, plays a relatively minor role in the shaping of values in young people. Princen (Ibid) does hint at what is really needed in the context of changes in values; his words will close this sub-section, and broadly anticipate the content of the following chapter (Chapter 5), which will focus on alternatives to Promethean attitudes:

So this segment of youth does not need “new values.” These young people can see as well as anyone (and certainly better than those with fossil-fuel lenses) that the current order is broken. What they need is a new vision and new language and answers to the tired old assertions of the past, of the fossil-fuel past, of the technology-and-efficiency-will-solve-all past, of the endless frontier and noble imperial past.

4.7 Conclusion to Chapter 4

In this chapter I have offered examples of how change in 'advanced' competitive consumer Capitalist industrial democratic dominion (ACID) is prevented – change away from the dominance of the Promethean attitudes and shapers of discourse I discussed in Chapter 3.

In the following chapter I explore alternative ideas that exemplify attitudes and characteristics completely unlike those of the Promethean in an attempt to assist in the goal of providing what Princen (quoted at the end of the previous sub-section) refers to as “a new vision and new language and answers to the tired old assertions of the past” (2010:57).

Chapter 5:

Are there alternatives to the 'drivers' of the ecological crisis?

5.1 Introduction

In the previous chapters, which together structurally constitute the first half of this study, I focused on aspects of what can broadly be called *the Promethean paradigm*. In Chapter 1 I focused on some of the details of the ecological crisis, while in Chapter 2 I looked at the broad causes of the crisis. In Chapter 3 I identified the dominant Promethean characteristics that historically gave rise to ACID – 'advanced' consumer competitive Capitalist industrial democratic dominion – and I explored critically some links between them and the ecological crisis. In Chapter 4 I focused on various discursive 'mechanisms' that prevent social change, i.e. that perpetuate different aspects of ACID. In Chapter 5 I now takes quite a radical turn in an 'alternative' direction and I focus on some attitudes, ideas, movements, and theories that stand in contrast to the collective characteristics of the broad Promethean paradigm focused on so far in this study.

The word 'ideas' is perhaps the most appropriate for what is focused on in this chapter, versus the word 'ideologies', the latter of which may seem like a more academically appropriate term. However, in *Blessed Unrest* (2007:16), a work that is explored in one of the sub-sections of this chapter, Paul Hawken offers some insight into the distinction between ideas and ideologies. He points out that there "is a vast difference between the two; ideas question and liberate, while ideologies justify and dictate". The Promethean attitudes and ideologies under the spotlight have historically *resisted* ways of thinking that threaten their perpetuation, as was seen in Chapter 4. As Hawken (Ibid) says further of ideologies, they "prey on... weaknesses and pervert them into blind loyalties, preventing diversity rather than nurturing natural evolution and the flourishing of ideas". It is exactly for this reason that in this chapter I now focus on ideas rather than ideologies – in order to encourage diversity in a context where such diversity has been marginalized via the historical reign of the Promethean.

The change in focus of this chapter compared to the previous four chapters can be described as a change from the Promethean to the Orphic attitude. In Chapter 3, the term 'Promethean' was taken from a section of Hadot's *The Veil of Isis* (2008:91–98). In the same section (Ibid), Hadot contrasts the Promethean attitude to the Orphic:

Orpheus... penetrates the secrets of nature not through violence but through melody, rhythm, and harmony. Whereas the Promethean attitude is inspired by audacity, boundless curiosity, the will to power, and the search for utility, the Orphic attitude, by contrast, is inspired by respect in the face of mystery and disinterestedness.

Hadot (2008:92) further contrasts the disrespect (towards nature) of the dominating Promethean attitude with the more symbiotic character of the Orphic attitude:

If... people consider themselves a part of nature because art is already present in it, there will no longer be opposition between nature and art; instead, human art, especially in its aesthetic aspect, will be in a sense the prolongation of nature, and then there will no longer be any relation of dominance between nature and mankind. The occultation of nature will be perceived not as a resistance that must be conquered but as a mystery into which human beings can be gradually initiated.

These are important characteristics of the Orphic attitude considering the ecological crisis: not promoting any 'relation of dominance between nature and mankind'; not directing human action towards conquering nature. Instead, the 'prolongation of nature' and the initiation into the mystery of nature stand out as cooperative aspects of the relationship between humankind and nature. These cooperative (versus competitive) characteristics are examples of what is being looked for in this chapter. Furthermore, a broad aim of mine in this chapter is to add to the list of Orphic characteristics as revealed so far in this introduction, expanding on what has already been said about the general character of 'the Orphic'³¹⁰.

Furthermore, in this chapter I dare to explore a somewhat eclectic range of ideas that align with the 'respectful' Orphic attitude in order to challenge the view that often is punted by proponents of the 'advanced' industrial consumer Capitalist system, that 'there is no alternative' to 'the system' (TINA, as discussed in section 4.7 above and which will be further commented on in the conclusion of this chapter). Despite the historical dominance of Promethean characteristics (Chapter 3) via their control mechanisms (Chapter 4), "a new spirit is in the air, and ... the generation now maturing, thrown through no choice of their own into a world defined by the ecological crisis, are also beginning to rise up and take history into their own hands" (Kovel 2002:x). The 'alternative' ideas focused on in Chapter 5 are appropriate areas of consideration for this new, developing set of paradigms, and together they can be said to constitute something of a 'response' to the dominant characteristics of ACID that would otherwise together hold (and perpetuate the belief) that 'there is no alternative'.

Baer (2012:294) offers some broader insight into why one would undertake the task of offering alternatives to the ecological insensitivity of Promethean paradigms:

Obviously, eventually the human species, like so many other species that have inhabited this planet, will become extinct, if not due to developments of our own making then due to natural events over which we have little or no control. Yet it seems that we as a species can exert some degree of agency or control over our fate during the course of this pivotal century with respect to our some 5 or 6 million years on this planet.

The proclamation of the ability to "exert some degree of agency or control over our fate" is much-welcomed optimism considering the depressing and worrying picture painted in Chapters 1 to 4 of the state of the planet's ecosystems, and socio-political and economic entities that by default perpetuate Promethean 'Business-as-usual'. Furthermore, Baer extends the context of the ecological crisis well beyond the relatively short period in human history where Promethean attitudes have dominated attitudes and discourse; his reference to "5 or 6 million years" hints at a view of the passage of time that positions human beings somewhere in the slow evolutionary unfolding of earth and all the life that arises and passes away on it, rather than as the epitome of life in the short period of 'civilised existence' typically associated with ACID by proponents of Promethean paradigms.

To comment on the structure of this chapter: the sub-sections are arranged in such a way as to constitute ordered, albeit indirect, 'responses' to various aspects of Chapter 3. 'Older Cultures' and 'Civilisation with Amnesia' can be approached as a critical response to Christianity; 'Morphic Resonance' can be approached as a critical response to the atomism of Science; 'Blessed Unrest',

³¹⁰ Note that throughout this chapter, as elsewhere in previous Chapters, the terms 'the Orphic' and 'the Promethean' will be used as nouns to denote broad paradigms. It will be clear when 'Orphic' or 'Promethean' are used as adjectives, for example, in phrases such as 'the Orphic attitude'.

‘Sacred Economics’, and the ‘Occupy’ and ‘Zeitgeist’ Movements can be approached as critical responses to Capitalism; ‘Deep Ecology’ can be approached as a critical response to Technology. Furthermore, all of the sub-sections of Chapter 5 are united by the common characteristics that some aspects of the topics have positive implications for ecologically-sensitive action *or* alternative thinking. In this way, it is hoped that a truly interdisciplinary context can be elucidated in response to the ecological crisis; not merely an interdisciplinarity of traditionally academic subjects, but of a variety of subjects that stretch and challenge orthodoxy in various contexts. Hoyer (2012:62) comments on the relevance of such a vast interdisciplinary approach; he is referring to Nordic ecophilosophy, but his comment is perfectly relevant here:

The fundamentals of interdisciplinarity are emphasized in all Nordic ecophilosophy. The bio- and human ecology focus on wholeness, on complexities, and on the complex inter-relations between the diversity of units, that makes the whole both something more and something else than the individual parts. Interdisciplinarity is considered a basic condition for the study and understanding of these complexities.

In further support for interdisciplinarity, I refer to a comment Rosi Braidotti makes in her book *The Posthuman* (2013:155). She praises the arena of academic Humanities for its characteristic interdisciplinarity: “a wealth of innovative interdisciplinary scholarship in and across the Humanities is an expression of the vitality of this field”. In the spirit of this kind of research prioritised by Hoyer and praised by Braidotti, then, this chapter needs to be approached somewhat differently to the ‘usual’ academic approach. The usual approach would be to offer a wide range of academic support for a given position or topic, which has been the approach taken in Chapters 3 and 4, and which will be taken again in Chapter 7. Such an approach is typically taken in the academic fields of eco-socialism and eco-feminism, two examples of areas that seem obvious contrasts to Promethean ideology. There is much academic work in circulation that explores these ‘eco-sensitive’ fields³¹¹, and will therefore not feature in this study so as not to ‘reinvent the wheel’, so to speak. However, many of the ideas and topics explored below are not explicitly academically inclined in the same way that the examples just listed are, and the ones below do not typically feature in the academic realm due to their marginalisation by, and novelty to, established orders – the Academy generally being one such established order. Traditionally ‘academic’ information pertaining to the ideas and topics has therefore unsurprisingly not surfaced during the course of their investigation. By exploring them and commenting on them in relation to what has been seen in previous chapters, I aim (partly) in this Ph.D. study to make (or at least start) a large contribution to the academic realm – in a sense, the attempt in Chapter 5 is to help widen the metaphorical playing field from which ideas can be accessed in order to strengthen intellectual responses to the ecological crisis. The hope is that such a process can help contribute further to a way of thinking that could play a part in the development of a new way of living; Kovel (2007:ix) comments on this as follows:

As the ecological crisis grinds on irrespective of capital’s propaganda system and its massive apparatus for fixing the environment, so does capital’s legitimacy begin to fray. With this, the possibility of new thinking emerges and begins to flower. On one side, a predictable inevitability, that the system will collapse; on the other, no more than a hope, grounded however in reality, that a new form of society may emerge no longer dependent upon accumulation and its progressive breakdown of ecosystems.

311 ...fields which do not necessarily provoke my support, for reasons beyond the scope of this study.

5.2 'Older' cultures

In this early section of Chapter 5, some common features of “Older cultures”, an appellation used by Thom Hartmann in his *Last hours of ancient sunlight* (1998:154), will be considered for their ecologically-sensitive stances and implications. Hartmann (Ibid) lists the Kogi, the Ik of Uganda, the Navajo, the Hopi, the Cree, Ojibwa and the San as examples of older cultures, though this list is by no means exhaustive. He identifies (Ibid) the following as important views, associated with older cultures, and I offer these views for consideration in light of the ecological crisis and the general state of ACID as explored in previous chapters. The first is that human beings “are part of the world”; the second, that it “is our destiny to cooperate with the rest of creation”. These are very simple ideas, but together they stand in strong opposition to the characteristics of the Promethean listed at the end of Chapter 4. Despite the simplicity of the ideas – or perhaps *due to* the simplicity of them – McDonough and Braungart offer the resonating sentiments of a member of an older culture, Oren Lyons, “faith keeper of the Onondaga” (2002:i³¹²), as one of three opening quotes to their book *Cradle to Cradle*: “What you people call your natural resources our people call our relatives”. The reference to natural resources should here evoke all that was said in Chapter 3 about Technology, specifically Heidegger’s analysis of Technological Enframing where nature is reduced to a standing reserve of resources with solely instrumental, pragmatic, operational value. One paradigmatic characteristic that featured throughout Chapter 4 is that of dominion over nature, and the associated domination of it – this attitude is quite clearly opposed to notions of ‘being part of the world’; rather, the world (i.e. nature) is something to which humans are superior in the Promethean view. Listed at the end of Chapter 4 there is also the following summary point: competition is emphasized, versus cooperation. Hartmann (Ibid) paints a clearer picture of the alternative view – that of cooperation – associated with older cultures: they “are most often cooperators, not dominators” and that “the anthropological record shows that not one culture believed itself to be separate from and superior to nature”. These characteristics are explicitly Orphic.

Vetlesen (2012:38) confirms the general picture of older cultures painted above by Hartmann, and demonstrates the startlingly different interactions that older cultures (versus newer, primarily Promethean cultures) had with nature; here, drawing on the work of Berkes, he is describing the Cree, a North American aboriginal group:

...the living environment is seen as a community of beings that are supernatural as well as natural. Whereas in Western science it is assumed that humans can control animal populations, in Cree worldview, 'human management' of animals and people is not possible. Rather, it is the animals who control the success of the hunt. The hunter has to show respect to the animals because the hunter is dependent on game. This instils an attitude of humility. The game is not there for the taking. ... The major principle is that everything caught is consumed and there is no waste. It is important that everything is eaten. Killing for fun or recreation or 'sport' without eating is transgression. What one kills, one keeps for eating.

The above quote needs no explanation considering the explicit difference drawn between the general Promethean worldview and the worldview of this older culture. There was no detection of humility in the analysis (in Chapter 4) of exclusively Promethean attitudes that have dominated the western world. Certainly there is endless waste produced by western culture (see Chapter 2), as opposed to the zero waste indicated in the above extract. The consequences for ecological

312 The page of opening quotations contains no page numbers. The page after it is the contents page.

preservation should be obvious already, but Vetlesen (2012:37) spells it out with the following; note that he uses the name 'indigenous cosmologies' below to denote older cultures:

Studies of indigenous cosmologies demonstrate how belief in the spirits of game animals restricted overhunting, and how shamanism functioned in the management of natural resources. Everything in the environment is considered to have life and spirit. A traditional conservation ethic can thus be defined as 'the awareness of one's ability to damage natural resources, coupled with a commitment to reduce or eliminate the problem'.

I must highlight the point made by Vetlesen in his observations about the Cree, the point about there being no waste. McDonough and Braungart, in their *Cradle to Cradle* (2002:92) devote a full chapter to the following theme: "Nature operates according to a system of nutrients and metabolisms in which there is no such thing as waste"; they argue at various stages in the book that human beings should create systems that replicate nature's system. Considering what Vetlesen said about the Cree, as well as some of the other points raised in this sub-section so far, it seems that human beings have an ancestry wherein such a system was employed.

J. Callicott, quoted by Vetlesen (2012:38), provides information pertaining specifically to American Indian culture that further describes the attitudes of associated older cultures; he also spells out further implications for what the attitude means for ecology:

The implicit overall metaphysic of American Indian culture locates human beings in larger social, as well as physical, environment. Existence in this larger society places people in an environment in which reciprocal responsibilities and mutual obligations are taken for granted without question or reflection. All creatures, be they elemental, green, finned, winged, or legged, are children of one father and one mother. One blood flows through all; one spirit has divided itself and enlivened all things with a consciousness that is essentially the same. The world around, though immense and overwhelmingly diversified and complex, is bound together through bounds of kinship, mutuality, and reciprocity.

Sheldrake (1994:13) quotes a Native American chief of the Wanapum tribe, whose words powerfully reinforce the point that older cultures share a deep kinship with the earth that fosters ecological equanimity. Here the chief is explaining "why he refused to till the ground"³¹³:

Shall I take a knife and tear my mother's bosom? Then when I die she will not take me to her bosom to rest. You ask me to dig for stone! Shall I dig under her skin for her bones? Then when I die I cannot enter her body to be born again. You ask me to cut grass and make hay and sell it. And be rich like the white men! But how dare I cut off my mother's hair?

Setreng (2012:105) provides an example of how older cultures' worldviews further translate into physical action with the natural environment. He asks one to consider "a Sherpa house in Nepalese Himalaya"; It

always appears 'unfinished', a creation that never reached its 'destined geometrical perfection'. But, from the traditional Sherpa point of view, the beauty and, intimately connected with that, the utility of the house may only be discovered if you settle down for a couple of generations, build such a house yourself, take responsibility for its daily care, live with the house instead of being its architect, repair it when (the frequent) need arises, add to it or subtract from it...

³¹³ To anticipate the ecologically-sensitive (resonating) character of permaculture (to be explored in Chapter 6), it favours the 'no-dig' approach to growing food, which is to say a 'no-till' approach.

Record a hundred years of the development of the house at a frame a day and play it back at “normal cinematic speed” (Ibid):

What will be revealed to you, is not a house in the Western sense, but an organic structure, its wall stones and roof materials will be moving about and changing, ...the animal and human life around it will expand and contract, speed up and slow down, shift in kind and variety... This is a house that is decaying every day, a fact which is accepted by the people that are part of this 'house-hold'. (Ibid)

The juxtaposition to the building characteristics of ACID is clearly enormous considering what was explored in Chapter 2 (sub-section 2.5) about the construction industry. The industry is epitomised by the production and application of cement, a substance that requires massive amounts of energy to produce and transport and hence has considerable negative environmental impact. Once cement has been used, it is bound to remain in its specific shape and form for many decades as something that is supposed to be impervious to nature’s cycles. If a person were to do something similar – record a hundred years of the development of the house at a frame a day and play it back at “normal cinematic speed” – the building will not change much (despite the huge quantities of energy typically used in buildings to heat and cool buildings, as discussed in sub-section 2.5), but instead stands out as separate to the natural cycles that surround it.

By way of summary the words of Vaclav Havel (1994:2) may be added to the preceding discussion:

Classical modern science described only the surface of things, a single dimension of reality. And the more dogmatically science treated it as the only dimension, as the very essence of reality, the more misleading it became. We may know immeasurably more about the universe than our ancestors did, and yet it increasingly seems that they knew something more essential about it than we do, something that escapes us.

From the above, it is clear that the respect for nature inherent in the attitudes of older cultures is Orphic and fosters actions that are Orphic. Indeed, what comes across is the notion that respect for nature is respect for oneself; as David Abram (1996:ix) states in his *Spell of the sensuous*: We “are human only in contact, and conviviality, with what is not human” – the members of older cultures clearly lived according to this ecologically-sensitive ethic.

5.3 Civilisation with Amnesia

It is unfortunate that I feel the need to begin this sub-section with a caveat. It is a caveat regarding Graham Hancock’s reputation, added to this sub-section well after it was first written. I add it here because I have been informed that some academics do not approve of Hancock’s work. I say that the inclusion of the caveat is unfortunate because I have delved deeply into Hancock’s work and have never once encountered anything disreputable about the man or his work. I will begin with a personal anecdote to convey the general response of some people – often academics – when hearing the name Graham Hancock. I once mentioned the name to someone I met – a father of a friend – who spent his career in the chemical industry and who thinks of himself as a Scientist. Upon hearing the name, he laughed and said instantly that Hancock has been debunked. I asked, “How so?” He said that his daughter has a degree in archaeology and that she said that Hancock has been discredited in archaeological circles. I asked if he had read any of Hancock’s work; he admitted that he had not. Curious, I looked online and found many comments claiming that Hancock is a “fringe

writer”³¹⁴ (for example, at badarchaeology.com), and a “crank pseudoarchaeologist”³¹⁵ (for example, at rationalwiki.org), but there was never any substance to the claims – for example, the entry at badarchaeology.com avoids any actual argument and offers this ‘cop-out’ instead: “A comprehensive analysis of his works would require a massive book, since it would need not only to refute his claims but also to present the comprehensive contextual evidence to show why his ideas cannot stand up. Nevertheless, I am currently working on a detailed analysis of *Fingerprints of the Gods* and its successors, which will eventually be published here. In the meantime, here is a blog post outlining why Graham Hancock has failed to impress mainstream archaeologists”. It is true that Hancock has failed to impress mainstream archaeologists – he is the proverbial thorn in their sides, and the information in this sub-section should explain why. Similarly, Rationalwiki.org offers no substance, but instead makes unsubstantiated claims (for example, the one about the BBC documentary, which I address in a footnote in this sub-section), and prefers instead to single out Hancock’s use of psychedelics for research purposes, which has nothing to do with the rigour of his actual research and work. The only question that one may have been able to ask, and cling on to as a potential problem-area in Hancock’s work, might have been this: if there was an advanced civilisation that existed twelve thousand years ago or more, *where is the evidence for this civilisation?* In his first book about the traces of an advanced ancient civilisation lost to history, *Fingerprints of the Gods* (1995), Hancock provides extensive data to support the idea that an ancient civilisation of some kind must have existed in vast antiquity, but the ‘mainstream’ archaeological support for his theory was thin or non-existent. So orthodox archaeologists may have been justified in stating that no ‘hard Scientific evidence’ *that they would accept* was available in the book (though even this dismissal is misleading, because the giant megalithic structures often under investigation are as about as ‘hard’ as evidence can get, and Hancock substantiates his claims from a wide spectrum of sources and types of data to show that the orthodox archaeological explanation of the origins of the megaliths are often laughably inadequate to explain some of the data). However, between the first and the second book on the topic, the second being *Magicians of the Gods* (2014), evidence was uncovered in the realms of mainstream archaeology and ‘impact science’, the latter of which is the study of a wide range of data pointing to past comet or asteroid impacts. I will discuss these in this sub-section, but I will name them here for further comment: the discovery of Gobekli Tepe in Turkey, a megalithic site acknowledged by ‘orthodox archaeologists’ as being *as least as old as* 11,600 years. It is clearly a highly complex site (I discuss this briefly in this sub-section) and must have been built by a civilisation with advanced knowledge and technology (to claim that hunter-gatherers built them, as some archaeologists do, is a complete ‘cop-out’ – there is no evidence of this level of skill in the archaeological records; Gobekli Tepe ‘leaps’ out at one as the construction of mathematical, astronomical, and masonry geniuses, qualities that orthodox archaeologists have never attributed to hunter-gatherers). This is also the case with Ganung Padang in Indonesia, another complex site, except it is confirmed by orthodox archaeologists as being as least as old as 12,500 years. The third area of hard scientific evidence comes from the work of a team of impact scientists, who have gathered large amounts of data that shows there was a massive comet impact with the earth some 12,900 years ago. I address these three areas of evidence in this sub-section. But it is important to point out that I have never, in any of my extensive research into this topic, found anyone who claims that Hancock is a ‘fraud’ and simultaneously provides acceptable and relevant evidence for their

314 <http://www.badarchaeology.com/lost-civilisations/graham-hancocks-lost-civilisation/> accessed 7 March 2017

315 http://rationalwiki.org/wiki/Graham_Hancock accessed 7 March 2017

claims . In short, the ‘skeptics’ make claims, while Hancock provides evidence and presents research for this theory. In my considered view, this is an instance akin to what Thomas Kuhn calls scientific revolutions. In *The structure of scientific revolutions* (1962:6), Kuhn mentions the *paradigm-shifting* revolutions in science/Science that ensued after the discoveries of Copernicus, Newton, Lavoisier, and Einstein were widely disseminated, and says the following:

these [examples]display what all scientific revolutions are about. Each of them necessitated the community’s rejection of one time-honored scientific theory in favor of another incompatible with it. Each produced a consequent shift in the problems available for scientific scrutiny and in the standards by which the profession determined what should count as an admissible problem or as a legitimate problem-solution. And each transformed the scientific imagination in ways that we shall ultimately need to describe as a transformation of the world within which scientific work was done. Such changes, together with the controversies that almost always accompany them, are the defining characteristics of scientific revolutions.

The information I present in this sub-section shows unequivocally that Hancock’s work has the same impact on the archaeological community. Finally, for anyone truly interested in the nature of the claims made by self-proclaimed skeptics of Hancock’s work, I recommend the nearly four-hour long podcast hosted by Joe Rogan³¹⁶, where Hancock and a colleague of his respond to some points raised by Michael Shermer (the editor of *skeptic.com*) and a geologist colleague of his. Shermer and the geologist ‘throw everything in the book’ at Hancock and his colleague, but there is no refutation of any aspects of the data used by Hancock and his colleague. Indeed, what stands out in the podcast is the dogmatism of Shermer and his colleague, the endless data that corroborate Hancock’s position, as well as the apology that Shermer’s colleague is forced to make to Hancock in light of the unacceptable distortion of claims he attributes to Hancock. I now turn to the main content of this sub-section.

In 1995, Graham Hancock’s *Fingerprints of the Gods* was published, a compilation of research that spans over 500 pages, with over 50 pages of references. Hancock argues convincingly that an advanced civilisation must have existed on Earth considerably prior to approximately ten thousand BCE, referring to this time as a forgotten period in human history. The theory holds that the civilisation was struck by a cataclysm and survivors dispersed via the oceans and across the globe, taking with them an advanced knowledge system that includes the building techniques used to construct megalithic structures at ancient sites all over the world, some of which are at least as old as twelve and a half thousand years and have such strong similarities as far as design and astronomical alignment go that their designers and builders must have been influenced by common sources with an advanced understanding of cosmic cycles – precession of the equinoxes, for example, is a 25,920 year cycle and knowledge of it is demonstrably displayed at and by these megalithic sites). Furthermore, peripheral evidence of the catastrophe can be found in the details of numerous cultural myths: “More than 500 deluge legends”, for example, “are known around the world and, in a survey of 86 of these..., the specialist Dr Richard Andree concluded that 62 were entirely independent of the Mesopotamian and Hebrew accounts” (Hancock 1995:193). The deluge myths, according to Hancock’s hypothesis, point to the same event in vast antiquity, the cataclysm that destroyed the ancient advanced civilisation and displaced its survivors.

316 <http://podcasts.joerogan.net/> accessed 6 June 2017.

Fingerprints of the Gods is a book of considerable length and contains thousands of references used by Hancock to make his case, so careful consideration of Hancock's argument in the book cannot occur here where strict limitations are here placed on overall word-count (and this is a long study). Conveniently, three recent discoveries assist immensely in conveying the kinds of focal areas of Hancock's work and some implications thereof. Hancock addresses these discoveries extensively in his sequel to *'Fingerprints'*, which is called *Magicians of the Gods*³¹⁷ (2014). The first is the acknowledgement by members of the Scientific community – see here³¹⁸, here³¹⁹, here³²⁰, here³²¹, and here³²² for examples – that “North America may have suffered a large cosmic impact about 12,900 years ago”. Hancock³²³ has referred to this event as the “smoking gun” that wiped out an advanced civilization: the comet

is, I believe, the ‘smoking gun’ that made us a species with amnesia and wiped out almost all traces of a former high civilisation of prehistoric antiquity. But there were survivors, who preserved at least some of the knowledge of the civilisation that had been destroyed with the intention of transmitting it to future generations, so it is not an accident that the first traces of the re-emergence of civilisation, in the form of the earliest known megalithic architecture and the re-promulgation of agricultural skills, occur at Gobekli Tepe in Turkey 11,500 years ago - a date that coincides exactly with the end of the Younger Dryas and the return to a more congenial global environment.

Gobekli Tepe is the second important discovery, the first of two that will be considered here, that has particular relevance to Hancock's hypothesis. This is what National Geographic magazine³²⁴, usually a ‘mouthpiece’ for orthodox archaeological views, has recorded about Gobekli Tepe:

Known as Göbekli Tepe (pronounced Guh-behk-LEE TEH-peh), the site is vaguely reminiscent of Stonehenge, except that Göbekli Tepe was built much earlier and is made not from roughly hewn blocks but from cleanly carved limestone pillars splashed with bas-reliefs of animals – a cavalcade of gazelles, snakes, foxes, scorpions, and ferocious wild boars. The assemblage was built some 11,600 years ago, seven millennia before the Great Pyramid of Giza³²⁵. It contains the oldest known temple. Indeed, Göbekli Tepe is the oldest known example of monumental architecture ... When these pillars were erected, so far as we know, nothing of comparable scale existed in the world.

The calm tone in which the paragraph is written is therefore misleading; the discovery of Gobekli Tepe ‘changes everything’³²⁶ for the contemporary Promethean view of the chronology and capability of humankind on this planet, because, as John Anthony West³²⁷ (quoted in Hancock 1995:358) points out, no human beings advanced enough to build intricately carved megalithic stone

317 Note that the vast majority of this sub-section was written before I could read *Magicians of the Gods*. I therefore have used a wide range of sources to convey what I feel is the relevant information in this sub-section, which I feel does justice to Hancock's work in *'Magicians'*.

318 <http://www.bbc.com/news/science-environment-23536567> accessed 18 June 2015

319 <http://www.dailymail.co.uk/sciencetech/article-2383733/A-comet-DID-wipe-North-American-prehistoric-humans-ice-core-data-suggests-cosmic-impact-killed-Clovis-people.html?ito=feeds-newsxml> accessed 18 June 2015

320 http://www.upi.com/Science_News/2013/08/01/Cosmic-impact-may-have-led-to-demise-of-early-North-American-peoples/UPI-85221375400939/ accessed 18 June 2015

321 <http://www.scientificamerican.com/article/evidence-found-for-planet-cooling-asteroid-12900-years-ago/> accessed 18 June 2015

322 <http://www.space.com/14793-comet-earth-impact-younger-dryas.html> accessed 18 June 2015

323 <http://www.grahamhancock.com/forum/HancockG12.php> accessed 18 June 2015

324 <http://ngm.nationalgeographic.com/2011/06/gobekli-tepe/mann-text> accessed 28 April 2015

325 Issues with the orthodox archaeological claims about the age of the pyramids will soon be called into question.

326 See Ian Hodder's comment below.

327 “John Anthony West... is an American author, lecturer, guide and a proponent of Sphinx water erosion hypothesis in geology”.

https://en.wikipedia.org/wiki/John_Anthony_West accessed 11 August 2015

structure complexes yet existed – or were *supposed* to have existed according to ‘orthodox’ archaeological timelines:

We are told that the evolution of human civilization is a linear process — that it goes from stupid cavemen to smart old us with our hydrogen bombs and striped toothpaste. But the proof that the Sphinx [and other megalithic structures, like Gobekli Tepe and Ganung Padang – that are indisputably older than the orthodox view of the chronology of humankind’s development] is many, many thousands of years older than the archaeologists think it is, that it preceded by many thousands of years even dynastic Egypt, means that there must have been, at some distant point in history, a high and sophisticated civilization — just as all the legends affirm.

The reason for acknowledging the site as so old is because carbon-14 dating techniques are the accepted means by which the age of a site is ascertained in orthodox archaeology, and this technique was indeed used to confirm that Gobekli Tepe is at least as old as stated in the article in the National Geographic magazine³²⁸. Similarly, eight to ten meters below the surface of Ganung Padang in Indonesia, at the second megalithic archaeological site to be considered here, carbon-14 dating has dated organic material preserved at the site (which, interestingly, was deliberately buried by whoever built it, which would have involved a monumental quarrying project) and the age of the organic material is 12,500 years³²⁹. Ironically, materialist, quantitative Science has been used to confirm what Hancock was able to indicate in a far more ‘alternative’ method he used twenty years ago. As West points out above, one of the implications of these discoveries of the past (approximately) seven years is exactly what Hancock had proposed a decade before their discoveries – the implication that *an advanced civilisation must have existed* and contained master mathematicians, astronomers, designers, builders, biologists, and others (and this is the real claim that orthodox archaeologists and academics were offended by, seeing as their narratives, which they errantly consider to be factual, deny the existence of an advanced civilisation existing in vast antiquity, though some in the archaeological communities have changed their narratives and are saying that hunter-gatherers built the megalithic site, despite absence of evidence for this claim). Gobekli Tepe, for example, consists of several astronomically aligned stone calendars on which an array of animals and patterns are carved in a three-dimensional manner; in other words, the masons carved away the surrounding stone to leave the protruding ‘images’ they carved, a remarkable feat on its own. One commentator, Ian Hodder of Stanford University, comments that "Göbekli Tepe changes everything"³³⁰ – the reason for this will be discussed further below. The discoveries of the ages of these sites further give credence to Hancock’s long-standing dubiousness³³¹ about carbon-14 dating as the orthodox method to decide on the date of megalithic sites in general, a method that is the basis for almost all claims made by orthodox archaeologists and in orthodox history books:

There's been a lot of carbon-14 dating carried out at [for example, the ancient South American megalithic site] Tiahuanaco. And carbon-14 dating, for me, says that this site was used and occupied at the date that that carbon-14 material comes from. It doesn't mean that the site was necessarily built at that time, or was originally laid out and planned at that time. This could have happened earlier. It would be possible, for example to go to Westminster Abbey and carbon-14 date a recent burial in the graveyard at Westminster Abbey, and say that Westminster Abbey was built in 1950 as a result of that dating, but that would not be correct. The site is much older

328 See <http://skepdic.com/gobeklitepe.html> accessed 13 August 2015

329 http://en.wikipedia.org/wiki/Gunung_Padang_Megalithic_Site#cite_note-9 accessed 28 April 2015 and <http://www.dailymail.co.uk/sciencetech/article-3021547/Is-hillside-hiding-world-s-oldest-pyramid-Ancient-structure-Indonesia-20-000-years-old.html> accessed 28 April 2015

330 http://en.wikipedia.org/wiki/G%C3%B6bekli_Tepe#cite_ref-0_3-0 accessed 28 April 2015

331 <https://grahamhancock.com/carbon-dating-hancock/> accessed 12 August 2015

and it was used through different periods of history - so I think we have to be a bit careful about carbon-14, particularly where megalithic sites are concerned, where we're dealing with stone monuments, carved and cut stone.

The above was taken from the transcript of the interview footage of Hancock's responses to an interviewer's questions for a BBC programme called *Atlantis Reborn*³³², which aired in 1999. In the same interview transcript, Hancock responds to the following question – "What convinces you that the date of the Tiahuanaco site [another ancient megalithic site] is much, much older than conventional archaeology, as they call it, would accept. What do you think is the convergence of evidence about the Tiahuanaco date?" – and Hancock's response is important:

I need to answer your question more broadly at first. I think that in the case of many ancient sites around the world the picture of the history of the site is confused by the fact that the site is constantly built on and rebuilt and rebuilt again over long periods of time. The ancient Egyptians had a habit of building temples on the sites of earlier temples. And I think the same thing happened in the Andes as well. A place that had a name or a reputation as a sacred place might be the site for a succession of monuments built by different cultures over long periods of time.

What slowly emerges during an investigation into Hancock's work is that orthodox archaeological views, which have formed the basis of 'history book' knowledge, have relied on the aforementioned limited carbon-14 dating methods that Hancock finds fault with. The orthodox archaeological views that have shaped history books and 'scholarly' knowledge in general³³³ hold that there were no advanced civilisations on earth prior to the ancient Egyptians around 3,500 years BCE; that 10,000 BCE, human beings were simple hunter gatherers; that there has been a steady upward 'development' of humankind from less advanced to increasingly more advanced, culminating in 'advanced' industrial society with all of the features of ACID. Such an orthodox view of history is one that comes across generally as Promethean, because humankind in its current format is elevated to the apex of Technological development. Hancock's work challenged such an orthodox view, and it is unsurprising that he is so often marginalised by proponents of mainstream orthodoxy as a member of 'the fringe', as is clearly evident at the website badarchaeology.com³³⁴. Certainly there may be issues with some of the thousands of resources that Hancock uses to explore aspects of his hypothesis – the nature of true science (as alluded to at the start of this sub-section via a comment on Kuhn's work) is that it is an on-going process of adopting (and adapting to) new information and discarding that which leads to insurmountable problems. However, in the cases of Gobekli Tepe and Ganung Padang, complex structures built from intricately carved rock monoliths, the very tool used by orthodox archaeologists, i.e. carbon-14 dating, establishes Hancock's hypothesis of a lost civilization as more than simply a hypothesis – it becomes the only down-to-earth³³⁵ explanation for

332 There was much controversy after this programme because the BBC quoted Hancock completely out of context, and omitted important information pertaining to his position, creating an air of scepticism about the reputability of Hancock. The BBC had to make a public apology to Hancock and another researcher, Robert Bauval, who will be mentioned again in this sub-section. See for details, <https://grahamhancock.com/category/bbc-horizon/page/3/> accessed 12 August 2015, where one finds comments from the investigative commission into the programme along these lines: "Whilst mindful of the difficulties of including lengthy arguments on what was only one of many important matters in the programme, the Commission considers that the omission of Mr Hancock's arguments was not justified. It therefore finds that this was unfair to Mr Hancock". Then consider the intricacy of Hancock's original complaint: <https://grahamhancock.com/horizon-bsc-complaint/> accessed 12 August 2015

333 See https://en.wikipedia.org/wiki/Timeline_of_human_prehistory and <http://humanhistorytimeline.com/> as examples; both sites accessed 13 August 2015.

334 <http://www.badarchaeology.com/lost-civilisations/graham-hancocks-lost-civilisation/> accessed 18 June 2015

335 One may wish to be, literally, less 'down-to-earth' and propose extra-terrestrial explanations, but Hancock's hypothesis circumvents the temptation to do so.

Interesting then that I have been confronted by people who incorrectly believe that Hancock is sympathetic to the notion that 'ancient aliens' built megalithic sites on Earth – in other words, some people completely misrepresent an author's work, and then dismiss the work based on misinformation.

the structures. The mounting evidence for the impact of approximately 12,900 years ago³³⁶ furthermore explains what happened to the advanced civilization in question – it was obliterated in what was the event upon which several dozen (often independent) deluge ‘myths’ are based.

There are incredibly important consequences for the view that an advanced civilization was displaced by a global cataclysm and thereafter played important roles in the construction of various megalithic structures all over the world. To begin, the carbon-14 dating method that has historically been used to ‘confirm’ the Promethean story of ‘civilization’, a story that generally starts with the invention of agriculture approximately 10,000 years ago and culminates in the contemporary ‘advanced industrial’ period, needs to be brought into serious question as the authority on how old ancient sites really are. Gobekli Tepe and Ganung Padang may have revealed vastly old carbon-14 dates, but the true age of megalithic sites may never be known if such a technique is used as the sole means of dating such sites, because one cannot date rock, but rather only carbon uncovered at a relevant site. Hancock and some of his peers propose and employ alternative methods of reasonably dating such sites, and these should be considered as necessary dating-tools to accompany the carbon-14 technique (more about this below). The alternative dating techniques have already been used at various sites and proponents suggest far older ages of various megalithic structures. With Gobekli Tepe and Ganung Padang as precedents that push the original dates of the structures into the distant past by many thousands of years, there will certainly be more such discoveries made in the near future. Even if this does not happen, which is logically unlikely, the entire established view of human history has to be rewritten: the old ‘story’ of humankind ‘progressing’ from ‘simple’ hunter-gatherers to agriculturalists to industrialists – i.e. the view repeated mantra-like by orthodox archaeologists and a host of other ‘professionals’ – is simply wrong. With new stories come new ways of thinking, and thus can the Promethean paradigm be challenged, giving way to an Orphic attitude (more below on why it would be Orphic).

The fact that the civilization of the history books is not the first also suggests that it may not be the last. The cataclysmic upheaval of a previous advanced civilization (and indeed other civilisations, like the one that used to inhabit Easter Island) raises questions about the future of what is contemporaneously widely heralded as an ‘advanced’ civilisation. As was shown in Chapters 1 and 2, humankind has indeed put in place the mechanisms necessary for its own demise, so *another* form of global cataclysm around the proverbial corner is not out of the realm of possibility for humankind – indeed, some commentators state that human extinction in the next few hundred years is quite likely³³⁷. Serious widespread consideration of Hancock’s work, and serious genuine scientific inquiry (free of vested-interests such as the ones many orthodox ‘professionals’ are bound by) into the knowledge systems that ‘the ancients’ left traces of in their megalithic structures, could unveil information that could prove to be very useful to a civilization on the brink of collapse – albeit due to their own devices this time. Even if such investigation reveals little ‘helpful’ information for the current civilization to learn from, it is surely useful to acknowledge broadly that a previous advanced civilization of vast antiquity met its demise, encouraging human beings to think in ‘geological time’,

336 This article - <http://www.space.com/14793-comet-earth-impact-younger-dryas.html> - does very well to contextualise the differing scientific views associated with the comet evidence, and indeed leaves the reader with little doubt that the comet does in fact play the role that Hancock claims it does.

337 See <http://www.globalresearch.ca/doomsday-scenarios-climate-change-and-world-war-iii/5458764> and http://www.theecologist.org/News/news_analysis/2959092/the_world_is_already_committed_to_a_six_meter_sea_level_rise.html both accessed 12 August 2015

and also acting as a warning to society at large that it is not invincible, possibly pushing the arrogance of the Promethean towards the ecological-sensitivity of the Orphic.

With an advanced civilization of vast antiquity – one capable of remarkable feats of building complex megalithic stone monuments that inspire awe and wonder to all who visit such sites – widely acknowledged, contemporary civilisation can no longer be considered the ‘apex of evolution’, but rather one phase of a cycle. Cycles are Orphic and do not fit well into the linearity of Prometheanism. With reference to Hancock’s work, Orthodox archaeology and its linear timeline can be shown to be blatantly wrong about some very important areas of investigation into the human past. Further claims by arrogant proponents of orthodox views need to be called into question, destabilising aspects of institutionalised knowledge. Institutionalised knowledge has been standardized by the Christian, Scientific, Technological, and Capitalist ‘Democratic’ powers that be – all Promethean in their actual historical forms (see Chapters 3 and 4). Hancock’s work is one important example of how the historical base of such Promethean paradigms can be challenged, and indeed ‘rewritten’.

Furthermore – and with regard to something so detailed as to be impossibly beyond the scope of this study but so important that reference to it cannot be omitted – Hancock’s research in *Fingerprints* paints a detailed picture of advanced knowledge systems in which acute awareness of cosmic cyclical processes is prominent (Hancock chapters 28-32; 1995:227-272), and an awareness of cycles is a characteristic of the Orphic. He explains what these cycles are (1995:258-259):

12 = the number of constellations in the zodiac; 30 = the number of degrees allocated along the ecliptic to each zodiacal constellation; 72 = the number of years required for the equinoctial sun to complete a precessional shift of one degree along the ecliptic; 360 = the total number of degrees in the ecliptic;

$72 \times 30 = 2160$ (the number of years required for the sun to complete a passage of 30 degrees along the ecliptic, i.e., to pass entirely through any one of the 12 zodiacal constellations); 2160×12 (or 360×72) = 25,920 (the number of years in one complete precessional cycle or ‘Great Year’, and thus the total number of years required to bring about the ‘Great Return’). ... 36 [=] the number of years required for the equinoctial sun to complete a precessional shift of half a degree along the ecliptic; 4320 [=] the number of years required for the equinoctial sun to complete a precessional shift of 60 degrees (i.e., two zodiacal constellations).

Hancock turns to the work of three prominent figures – Archeo-astronomer Jane B. Sellers³³⁸, and professors Santillana and von Dechend – in the ‘alternative’ approach to humanity’s distant past, and offers his case based upon their findings. Hancock (1995: 246) says of Santillana and von Dechend that they “present a formidable array of mythical and iconographic evidence to demonstrate” that “at some unknown date, it seems that certain archaic myths from all over the world were ‘co-opted’ (no other word will really do) to serve as vehicles for a body of complex technical data [i.e. the numbers quoted above] concerning the precession of the equinoxes”³³⁹. He says of Sellers that she believes the relevant astronomical cycles numbered above

³³⁸ Jane B. Sellers is, according to Hancock (1995:256), one of the “few serious scholars to have tested the theory advanced by Santillana and von Dechend in Hamlet’s Mill”. A helpful description of the latter two figures is offered at Wikipedia.com: Santillana was “Professor of the History of Science in the School of Humanities in 1954. In 1969, he published a book entitled: Hamlet’s Mill, An Essay on Myth and the Frame of Time with Dr. Hertha von Dechend. This book focussed upon the understanding of the connection between the mythological stories of Pharaonic Egypt, Babylon, Greece, Christianity, etc. and the ancient observations pertaining to the stars, planets and, most notably, the 26,000 year precession of the equinoxes.” https://en.wikipedia.org/wiki/Giorgio_de_Santillana accessed 11 August 2015

³³⁹ See Hancock 1995:227-272 for extensive data and information about precession.

constitute the basic ingredients of a precessional code which appears again and again, with eerie persistence, in ancient myths and sacred architecture. In common with much esoteric numerology, it is a code in which it is permissible to shift decimal points to left or right at will and to make use of almost any conceivable combinations, permutations, multiplications, divisions and fractions of the essential numbers (all of which relate precisely to the rate of precession of the equinoxes).³⁴⁰

These are not hollow claims – Hancock supports his argument by way of Sellers, Santillana and von Dechend with great detail (1995:246-272)³⁴¹. Thereafter, initially in *153 pages* (1995:275-428), Hancock explores³⁴² the intricate edifices of the Giza plateau from various perspectives, for example, from the perspective of geologist Prof. Robert Schoch³⁴³, who showed in 1992, after being approached by John Anthony West (quoted above), that the erosion marks on the Sphinx are caused by water (Hancock 1995:420-422). Schoch states conservatively at robertschoch.com³⁴⁴ that the water erosion finding means that the Sphinx must date back to “at least 5000 B.C., and maybe as early as 7000 or 9000 B.C.”, well predating the general 2500 B.C. period believed by orthodox archaeologists (Ibid and here³⁴⁵) to be the time of its making. John Anthony West states unequivocally that one has to “go back to before 10,000 BC to find a wet enough climate in Egypt to account for weathering of this type and on this scale. It therefore follows that the Sphinx must have been built before 10,000 BC and since it’s a massive, sophisticated work of art it also follows that it must have been built by a high civilization” (Hancock 1995:419). The pyramids are more awe-inspiring megalithic proofs of the existence of a high civilisation that clearly did not build the structures in order to entomb pharaohs³⁴⁶, which is what the orthodox archaeologists say the pyramids were built to do³⁴⁷ - Hancock compiles overwhelming evidence to show that the Great Pyramid is far more than merely a tomb: it is a geodetic marker (1995:431), aligned to true north (and of course the other cardinal points as well); the meridian of the Great pyramid “sliced the Nile Delta region into two equal halves” (Ibid), and even more intriguing, “the Great Pyramid appears to have been carefully sited as a geodetic marker for the apex of the Delta” (1995:431-432), requiring an eagle-eye view of the territory, as well as the understanding and technology to encode massive geographical proportions into megalithic buildings. This latter point is again evident when one considers that the number pi³⁴⁸ is built into the Great Pyramid³⁴⁹ (Hancock 1995:177-178), as well as

340 See Chapter 28 of Fingerprints for more on the 25,920 year cycle known as precession of the equinoxes.

341 Space limitations do not permit examples to be listed here – see the referenced pages for ample examples.

342 ‘Explore’ in the literal and metaphorical sense – he spent time at Giza when writing this part of the book.

343 Schoch is “a Boston University geologist and specialist in rock erosion” (1995:420)

344 <http://www.robertschoch.com/sphinxcontent.html> accessed 11 August 2015

345 “For years, Egyptologists and archaeologists have thought the Great Sphinx of Giza to be about 4,500 years old, dating to around 2500 B.C.” -

http://www.nbcnews.com/id/3077390/ns/technology_and_science-science/t/how-old-sphinx/#.VcygFR9uTVM accessed 13 August 2015.

346 It may be the case that pharaohs used the pyramids as tombs, but the ‘floor plan’ of the megaliths dates back into vast antiquity.

347 “Most were built as tombs for the country’s pharaohs and their consorts during the Old and Middle Kingdom periods”.

https://en.wikipedia.org/wiki/Egyptian_pyramids#cite_ref-2 accessed 12 August 2015. The fact that this is from Wikipedia is testament to the fact that the faulty tomb conclusion is the dominant one, considering that Wikipedia is unarguably the source that most people turn to contemporarily for information.

348 Interestingly, orthodox scholars do not contest the pi relationship, but they do attribute it to coincidence (Hancock 1995:434).

349 Some details (Hancock 1995:177-178): “Where the Great Pyramid is concerned, the ratio between the original height (481.3949 feet 9) and the perimeter (3023.16 feet 10) turns out to be the same as the ratio between the radius and the circumference of a circle, i.e. 2π . 11. Thus, if we take the pyramid’s height and multiply it by 2π (as we would with a circle’s radius to calculate its circumference) we get an accurate read-out of the monument’s perimeter (481.3949 feet $2 \times 3.14 = 3023.16$ feet).

Alternatively, if we turn the equation around and start with the

circumference at ground level, we get an equally accurate read-out of the height of the summit (3023.16 feet) divided by 2 divided by 3.14 = 481.3949 feet.”

into the Pyramid of the Sun at Teotihuacan in Mesoamerica³⁵⁰; this is almost inconceivably difficult to do accurately in any construction, never mind when the building materials are between two to fifteen tons a piece as they are in the case of the Great Pyramid, with many of the heavier monoliths counter-intuitively constituting some of the higher courses – “really big monoliths that had been carved out of solid limestone and raised more than 100 feet into the air before being placed faultlessly in position” (Hancock 1995:283). Furthermore, the Great Pyramid, almost unbelievably “seemed to have been designed to serve as a map-projection—on a scale of 1:43,200 – of the northern hemisphere of our planet” (Hancock 1995:434-435):

consider the earth’s polar radius of 3949.921 miles. If we scale it down 43,200 times we get 0.0914 of a mile: 482.59 feet. The earth’s polar radius scaled down 43,200 times is therefore 482.59 feet. By comparison the Great Pyramid’s height is 481.3949 feet—just a foot less than the ideal figure, an error of barely one-fifth of one per cent. As near as makes no difference, therefore, the perimeter of the Great Pyramid’s base is indeed 1:43,200 of the equatorial circumference of the earth. And as near as makes no difference, the height of the Great Pyramid above that base is indeed 1:43,200 of the polar radius of the earth.

43,200 is not a random number: as was shown above, 4,320 features in the list of ‘astronomical numbers’ that feature in various ancient myths, numbers that are frequently multiplied (or divided) by ten (or 100 or 1000, etc.) in numerous myths encoding precessional information. As Hancock says (ibid),

What absolutely excludes the possibility that this could be a coincidence is the fact that the scale involved is keyed in numerically to the rate of precession of the equinoxes — one of earth’s most characteristic planetary mechanisms. It is therefore clear that we are confronted here by the manifestation of a deliberate planning decision: one intended to be recognizable as such by any culture which had acquired (a) an accurate knowledge of the dimensions of the earth and (b) an accurate knowledge of the rate of precessional motion.

As if the above information is not enough to cause re-evaluation of orthodox archaeological views, the floor plan of the structures in the broad Giza pyramid complex has been shown by Robert Bauval to correspond to a “picture of the skies [i.e. star layout]... not as they had looked in the Fourth Dynasty around 2,500 BC, but as they had looked – and only as they had looked – around the year 10,450 BC” (Hancock 1995: 356). Bauval is a mathematician who analysed the Giza site layout using a computer program that shows the positions of the stars (as viewed from Earth) anytime in the past and future. Hancock (1995: 444) quotes Bauval:

At 10,450 BC — and at that date only — we find that the pattern of the pyramids on the ground provides a perfect reflection of the pattern of the stars in the sky. I mean it’s a perfect match — faultless — and it cannot be an accident because the entire arrangement correctly depicts two very unusual celestial events that occurred only at that time.³⁵¹

It is possible to keep compiling remarkable aspects such as the ones mentioned above about the Giza plateau for many pages; and then one could turn to the another megalithic site and start all over again, and then another site, and so on – and Hancock has done this in *Fingerprints*, as well as in *Magicians of the Gods* (2014), the sequel to *Fingerprints*. In the early years after the publication of

350 The latter pyramids have a 4pi ratio in the same way as the former have 2pi. Hancock’s comment (ibid) on this similarity is telling: both pyramids incorporate pi “in much the same way, and in a manner which leaves no doubt that the ancient builders on both sides of the Atlantic were thoroughly conversant with this transcendental number.”

351 See Hancock 1995:443-445 for the detailed description and explanation of the ‘two events’ mentioned by Bauval.

Fingerprints, it was common to encounter heated archaeological dismissals of views (regarding the ages of various structures on the Giza plateau) such as those of Hancock³⁵², Schock, West, and Bauval (despite the extensive data, research and evidence they offer in support of their work), but it is at least clear that there was not consensus about the age of the Giza structures at the time of the writing of *Fingerprints* in 1995. Indeed, Hancock's research (which rests upon the work of hundreds of other researchers) was instrumental in the revolution that has been occurring in the way that human beings view the roles of their predecessors of vast antiquity since the publication. What has certainly changed in recent years is that news of the official ages of Gobleki Tepe and Padang Gadang has spread, confirming the 'theories' – now turning out to be 'good science' – endorsed by human beings who dared not to accept orthodox (Promethean) views in light of information that could not be dismissed.

This sub-section will conclude with an 'educated guess' by Robert Bauval, and here I do acknowledge that the focus is no longer 'grounded' in ways that it has been. Nevertheless, it is a very inspiring, relevant, and thought-provoking extract considering the present focus on 'the Orphic'. Bauval was asked by Hancock during the writing of *Fingerprints*, 'What do you think the purpose of the pyramid builders really might have been?' (1995:453). Here is Bauval's response [underlined sections highlight relevant Orphic qualities]:

They didn't do it because they wanted an eternal tomb... In my view, they had no doubts at all that they would eternally live. They did it — whoever did it — they have transmitted the power of their ideas through something that is to all intents and purposes eternal. They succeeded in creating a force that is functional in itself, provided you understand it, and that force is the questions it challenges you to ask. My guess is that they knew the human mind to perfection. They knew the game of ritual ... Right? I'm serious. They knew what they were doing. They knew that they could initiate people far ahead in the future into their way of thinking even though they couldn't be there themselves. They knew that they could do this by creating an eternal machine, the function of which was to generate questions. ...The machine is the pyramids!... the whole of the Giza necropolis really. And look at us. What are we doing? We're asking questions... lots and lots of questions just as we've been programmed to do. We're in the hands of real magicians here, and real magicians know that with symbols—with the right symbols, with the right questions — they can lead you into initiating yourself. Provided, that is, you are a person who asks questions. And, if you are, then the minute you start asking questions about the pyramids you begin to stumble into a whole series of answers which lead you to other questions, and then more answers until finally you initiate yourself.

Indeed, in the Introduction to this chapter Hadot is quoted with the following: the "occultation of nature will be perceived not as a resistance that must be conquered but as a mystery into which human beings can be gradually initiated" – initiation into a mystery, into the mystery that shrouds the human past and the human condition in general despite the concerted Promethean efforts to control human attitudes and consciousness. As far as this initiation is concerned, one would arguably be initiated into an Orphic paradigm: the realisation that contemporary ACID is not the apex of civilisation, that human society is subject to the same rise-and-collapse cycles as 'nature', that "melody, rhythm, and harmony" (see Introduction to this chapter) have been realised and prioritised

352 For example, see <https://badarchaeology.wordpress.com/2014/01/02/hancocks-fingerprints-of-the-gods-part-i-misunderstanding-early-modern-cartography/> accessed 11 August 2015. It is a blog post trying to 'debunk' Hancock's work by taking up (in this case) six points of issue with one (out of literally thousands) of Hancock's areas of focus in *Fingerprints*, throwing the entire theory of an advanced ancient civilisation out with the bathwater of discrepancies about a map. A lengthy comment in reply to the post provides some important context, in response to which one commentator notes that the blog author's "points seem to be firing shots over the Graham Hancock ship and not actually hitting anything. [The] evidence does not appear to be any more conclusive than the claims [the blogger is] attempting to shoot down."

by the predecessors of ACID, that “respect in the face of mystery” overcomes the limitations of reductionist, orthodox attitudes and paradigms.³⁵³

5.4 Morphic Resonance

In *The Rebirth of Nature* (1994), Rupert Sheldrake offers a biological and scientific³⁵⁴ hypothesis with powerful philosophical implications generally, with specific implications for the two different ways of seeing the world that broadly have been called Promethean and Orphic (Hadot 2008:91–98) in this study, and with implications for the way that humans can respond to the ecological crisis. Sheldrake (1994:129) summarises the three “possible models of the regularities of nature in the context of evolutionary cosmology”, the third of which here introduces his hypothesis:

First, there is the traditional model that all the laws of nature are eternal and in some sense prior to the physical universe in space and time. Second, there is the idea that new laws come into being as nature evolves and thereafter apply universally. And third, there is the idea that the regularities of nature are essentially habitual and that a kind of memory is inherent in nature. This habit model implies that past patterns of activity influence those in the present. According to the hypothesis of formative causation, this influence takes place by morphic resonance.

Sheldrake’s is a sophisticated animistic theory – it does not hang on to the out-dated and philosophically problematic notion of souls of, for examples, animals (human beings included), trees and crystals, but instead draws on the notion of fields. Sheldrake places immense importance on field theory because with the development of the concept of fields came important challenges to reductionist, materialist Science – the kind of Science that is focused on in-depth in Chapter 3. As was seen in that chapter, proponents of strict mechanistic Science hold firmly materialist views, reducing the universe to a glorified machine. However, Einstein’s gravitational field is one example (of several) of how field theory challenges mechanistic views: his

gravitational field is not *in* space and time; rather, it *contains* the entire physical world, including space and time. The gravitational field *is* space-time, and its geometrical properties are the cause of gravitational phenomena; it acts as a formative or formal cause, like the souls of medieval philosophy. Whereas Newton’s followers supposed that the attractive forces of gravitation arose inexplicably from material bodies and spread out in all directions through space, in modern physics the gravitational field is primary: it underlies both material bodies and the space between them. ...This model of the cosmos is nothing like nineteenth-century materialism, which made ‘inanimate brute matter’ the primary reality and source of invisible forces. (Sheldrake 1994:83)

In the above quote from Sheldrake, he identifies materialism as particular to the nineteenth century. However, it is clear from early on in his book that he views “the mechanistic theory of nature” (1994:3) as the version of Science that has been instrumental in the approach human beings have generally taken towards nature right up until the present time: in “the official world – the world of work, business, and politics – nature is conceived of as the inanimate source of natural resources, exploitable for economic development”. (Ibid) He further states that through “the successes of

353 One may further point to John Fowles’s *The Magus* as novelistic confirmation of the importance of learning that ‘mystery’ is connected with what human beings are, in essence.

354 Note that I do not capitalise the first letter of the word *science* here because Sheldrake’s theory seems free from the influence from the attitudes and agendas that predicate Promethean Science – see Chapter 3 for my exploration of the historically-dominant Promethean character of Science.

technology, the mechanistic theory of nature is now triumphant on a global scale; it is built into the official orthodoxy of economic progress. It has become a kind of religion. And it has led us to our present crisis" (1994:5). These are strong characteristics of the Promethean paradigm, as explored in Chapter 3, where Scientific materialism and reductionism, as well as Technological 'progress', were identified as instrumental historically in the shaping of human actions towards ecologically-destructive ends. Shel Drake's reference here to the historically dominant economic and political view of nature as an "inanimate source of natural resources", as well as the reductio-mechanistic Scientific employment of Technology, is perfectly in alignment with Heidegger's analysis of the historically dominant Technological approach to nature as a "standing reserve" (1977:4;19-20) of resources for purely human use.

In outlining, contextualising, exploring, and evidencing his hypothesis, Shel Drake shows that an important immaterialism must be acknowledged in science and biology. This is clear in the case of fields, as touched upon above in the instance of Einstein's all-encompassing gravitational field. From "a non-'orthodox' scientific point of view"³⁵⁵ (1994:83) according to Shel Drake, fields "put back into physics spontaneously self-organising entities with most of the properties of souls" (Ibid). Quantum mechanics elevates such immaterialism to 'dizzying heights': "In quantum theory, entities such as protons and electrons are regarded as wave packets, or quanta of vibration. They exist as vibrations of quantum matter fields, one kind of field for each kind of particle" (1994:87). This is again nothing like the old-fashioned Promethean materialism that is so evident as a motivating factor in problematic ecologically-degrading human action (see Chapter 3). Nevertheless, as Shel Drake points out, the "result of all these [scientific] changes is that fields, together with energy, have become the basis of physical reality. In the phrase of Karl Popper, through modern physics, "materialism has transcended itself" (2004:88).

The notion of materialism transcending itself is very exciting from the Orphic point of view; the reasons for this will become clear shortly. First, it is important to explore Shel Drake's theory of morphic fields in more detail here in order to grasp some wider implications of the hypothesis. He postulates (1994:110) that morphic fields are the means by which "self-organising systems at all levels of complexity – including molecules, crystals, cells, tissues, organisms, and societies of organisms" – organise themselves. These fields have an "inherent memory of previous [systems] of the same kind" (1994:111): "substances such as penicillin crystallise the way they do not because they are governed by timeless mathematical laws but because they have crystallised that way before; they are following habits established through repetition" (Ibid). "Morphic resonance" is the term that Shel Drake coins for the process whereby past systems/organisms affect the morphic fields of later systems/organisms. He says (Ibid) of morphic resonance that it "is the influence of like upon like through space and time. ...It does not involve a transfer of energy, but of information". Shel Drake illustrates this process at work with the following example (Ibid) of a tendency he claims is well known in science:

when a newly synthesized organic chemical is crystallized for the first time (say a new drug), there will be no morphic resonance from previous crystals of this type. A new morphic field has to come into existence; of the many energetically possible ways the substance could crystallize,

³⁵⁵ Being non-orthodox, this version of science warrants a lower-case first letter. I have explained my reasons for using uppercase and lowercase first letters for certain words (like science/Science and technology/Technology) numerous times at this stage of the study; see the 'Conventions' section for the first time I explain this convention.

one actually happens. The next time the substance is crystallized anywhere in the world, morphic resonance from the first crystals will make the same pattern of crystallization more probable, and so on. A cumulative memory will build up as the pattern becomes more and more habitual. As a consequence, the crystals should tend to form more readily all over the world.³⁵⁶

Sheldrake offers other examples of how morphic resonance occurs in complex life forms – one example is that of the increased likelihood of the abnormal development of fruit flies in laboratory conditions after such abnormal development has already occurred in past instances (Sheldrake 1994:112). Another example is the learning of a new trick by rats in one country when thereafter rats in laboratories in different countries “show a tendency to learn it faster” (Ibid). The morphic field hypothesis postulates that in the previous three cases – crystals, fruit flies and rats – all members of the individual species are influenced by the morphic field for the entire species. Using an example of a giraffe, Sheldrake (1994:110) explains:

The fields of a given species, such as the giraffe, have evolved; they are inherited by present giraffes from previous giraffes. They contain a kind of collective memory on which each member of the species draws and to which it in turn contributes. ...The fields are the means by which the habits of the species are built up, maintained and inherited.

This may sound illustrative of the function of genes and DNA, but after a thorough exploration of such genetic processes, Sheldrake (1994:102-108) shows that mechanistic explanations making reference to genetics and DNA fall short when trying to explain what the formative influence is that determines, for example, the development of arms and legs when genes (mere chemicals) “do not determine the form” (1994:107) and when *all* the cells in the body contain the same DNA (Ibid):

Clearly some formative influence other than DNA must be shaping the developing arms and legs. All developmental biologists acknowledge this fact. But at this stage their mechanistic explanations peter out into vague statements about ‘complex spatio-temporal patterns of physic-chemical interaction not yet fully understood.’ Obviously this is not a solution but just another way of stating the problem.

Morphic field theory (in the above instances where it offers explanations usually left to genetics, it is called *morphogenetic* field theory) may provide much more satisfactory approaches to such problems. And this field theory works for all kinds of phenomena, as explored by Sheldrake: the mystery of instinct (1994:113-115), the mystery of memory (1994:115-117), the mystery of social organisation (1994:117-120). Sheldrake (1994:121) goes as far as saying that even the “so-called laws of nature may be more like habits, maintained by morphic resonance”. Clearly this has the potential to be a radical idea, but as Sheldrake (Ibid) points out, now “that all nature is thought to be evolutionary, it is no longer possible to take for granted the conventional idea that all chemical and physical systems are governed by eternal laws of nature”. Even more radical is the idea of transcendent ‘eternal’ laws of nature that are so popular in mechanical and reductionist scientific schools: “If memory within nature sounds mysterious, we should bear in mind that mathematical laws transcending nature are more rather than less so; they are metaphysical rather than physical” (1994:129).

³⁵⁶ It is telling that a mechanistic explanation for such a difficulty with crystallizing new compounds is popular in advanced industrial society: “The most popular explanation among chemists for this phenomenon is that fragments of previous crystals are transferred from laboratory to laboratory on the beards or clothing of migrant chemists. They then serve as nuclei for new crystals of the same type. Or the crystal seeds are supposed to be blown all over the world as microscopic dust particles in the atmosphere” (Sheldrake 1994:112).

The hypothesis of morphic resonance is exciting in the context of the ecological crisis for various reasons. In Chapter 3, as already discussed in this sub-section, mechanistic, reductionist Science was explored as instrumental in the development of the ecological crisis, but as Sheldrake states (1994:5),

science itself has begun to transcend the mechanistic worldview. The idea that everything is determined in advance and in principle predictable has given way to the ideas of indeterminism, spontaneity and chaos. The invisible organizing powers of animate nature are one again emerging in the form of fields[;] ...the laws of nature may not be eternally fixed; they may be evolving along with nature.

The notion of evolving laws of nature suggests a process that is alive and vital, as opposed to the static and mechanistic material nature of the universe that underlies and accompanies “orthodox” (1994:3) Science. Indeed, here ontology can be thought about from an ‘unorthodox’ scientific perspective where everything that exists is endowed with a fascinating and profound type of vitality: “The cosmos is like a great developing organism, and evolutionary creativity is inherent in nature itself”³⁵⁷ (1994:96)³⁵⁸. A purely mechanistic, materialist view cannot share this view: nature is “denied the traditional attributes of life, the capacity for spontaneous movement and self-organization. She lost her autonomy. ...Nature [is seen as] inanimate and passive, acted upon by external forces in accordance with the mathematical laws of motion” (1994:79). It goes without saying that such a Promethean view of nature as inanimate and ‘dead’ makes it very easy³⁵⁹ to exploit nature, to merely participate in the extraction of resources from an ‘unimportant’ standing reserve of materials. However, if nature were to be seen participating in a complex process of evolution, where each moment, each ‘event’, and each amalgamation of matter were to be seen as highly consequential for the future development of all future moments, ‘events’, and amalgamations of matter, then the possibility is that a person would consider more carefully how they act and behave towards nature. Combined with an awareness of the ecological crisis, awareness of morphic field theory can affect attitudes for the better: “there is a shift from humanism to animism, from an intensely man-centred view to a view of a living world. We are not somehow superior to Gaia; we live within her and depend on her life” (Sheldrake 1994:206). These sentiments from Sheldrake, specifically the one about the shift from humanism to animism, would surely please Rosi Braidotti, who throughout her book shows frustration with humanist limitations; here is a case in point: “my interest in the posthuman is directly proportional to the sense of frustration I feel about the human, all too human, resources and limitations that frame our collective and personal intensity” (2013:194). I contend that the historical domination of Promethean attitudes and ‘approaches’ (see Chapters 3 and 4), accompanied by the ecological consequences of the Promethean attitudes and approaches (see Chapters 1 and 2), contextualise the kind of frustration expressed by Braidotti, and that ‘approaches’ and attitudes such as those of Sheldrake and explored in the (other) sub-sections of Chapter 5 and throughout Chapter 6, can be approached to mitigate against Promethean attitudes and their consequent ecological destruction.

357 Here the similarity to James Lovelock’s Gaia hypothesis is unmistakable. Sheldrake (1994:153–163) shows how Lovelock’s Gaia hypothesis is completely compatible with the sophisticated animistic theory of morphic fields.

358 Note that the idea of evolutionary creativity is already encountered in the work of Henri Bergson, and taken up by Deleuze and Guattari.

359 On this note, Sheldrake (1994:75) makes a comment that touches on several areas of focus of this study so far: “One powerful reason for sticking to the mechanistic view is that it is easier; it is still the orthodoxy of industrial civilization. But it may not be easier for long. Public attitudes are greening, old political and economic certainties melting away. Doubts about the mechanistic approach to agriculture and medicine are growing; the vision of conquering nature is losing its glamour; and the climate is changing, both literally and metaphorically”.

Sheldrake is aware that his idea of morphic resonance “already exists in Jung’s theory of the collective unconscious as an inherited collective memory. The hypothesis of morphic resonance enables the collective unconscious to be seen not just as a human phenomenon but as an aspect of a far more general process by which habits are inherited throughout nature” (1994:117). Therefore philosophically there is an analogue for what has been explored in this sub-section. However, by suggesting and thoroughly supporting the idea that such a process occurs for all things – the laws of physics, plants, rocks, animals, crystals, parts of atoms – and not just human beings, Sheldrake opens up a world of intellectual possibilities that are mostly closed in the strict attitudinal and discursive Promethean areas that have dominated humankind historically³⁶⁰. Human beings can be said to *share* in the process of morphic resonance, and because their actions tend to impact on so many other natural entities – soil, water, minerals, animals, plants and trees, air, and so on, as has been seen in Chapters 1 and 2 – with a scientifically sophisticated animistic view they can more carefully consider how their individual and collective actions affect their own species and other entities. When it comes to their own species, a sense of responsibility is further promoted in humans, because if they contribute to a collective 'memory', then there is the option of making their contributions positive or negative. In the time of ecological precariousness, positive action ecologically is positive action for the human species, seeing as the latter relies on the well-being of the former in order not only to survive but to flourish. This latter insight is *precisely* what seems to be lacking at present, though.

Considering that the book about morphic resonance I have referred to throughout this sub-section was published in 1994, it is interesting to note that more than twenty years later, in the March of 2017, an article appeared at BBC.com entitled ‘Life may be getting better at evolving’³⁶¹, in which some startling similarities to the theory of morphic resonance are apparent (there are also some differences, but I openly focus on the similarities below). The article begins by describing a computer scientist, Richard Watson, who, when he was younger, read a scientific paper called ‘Complex adaptations and the evolution of evolvability’³⁶². The relevance of computer science to evolutionary biology is this:

Watson's basis for this claim [that gene networks evolve like neural networks learn] is the idea that the connections between genes can be strengthened or weakened as a species evolves and changes – and it is the strength of those connections in gene networks that allow organisms to adapt. This process is similar to how human-made artificial neural networks on computers work.

Here are several extracts from the article that clearly resonate with some of the information that has appeared in this sub-section:

- The article [read by Watson when he was younger] ... tackled a long-running problem in evolutionary biology: we do not fully understand how organisms can adapt so successfully to their environments.
- Creatures do not seem to be merely at the mercy of random changes, or mutations, in their genes over time. Instead, they actually seem to "improve" their ability to adapt. It seemed this ability was not explained solely by the process of natural selection, in which the best traits are passed on by the most successful organisms.

360 Not that Jung’s collective unconscious is elevated to any high esteem in dominant discourses – quite the contrary, due to its immaterial ‘nature’, the theory is unanimously neglected in the mechanical Science that dominates advanced industrial society. Yet the idea of the collective unconscious is a strictly human-centred one, and Sheldrake independently applies it to all things, as discussed in this sub-section.

361 <http://www.bbc.com/earth/story/20170301-life-may-actually-be-getting-better-at-evolving> accessed 7 March 2017

362 Available at www.sccs.swarthmore.edu/users/08/bblonder/phys120/docs/wagner.pdf accessed 7 March 2017

- ...there is more to [evolution and natural selection], because genes often work together. They form 'gene networks', and those gene networks can also sometimes be passed intact down the generations.
- ...gene networks in animals... actually "learn" what works and what does not over time.
- Watson has also suggested that gene networks can contain "memories" of past adaptations, which can be expressed when required by the environment.
- [A] relevant phenomenon is 'convergent evolution', in which unrelated species living in completely separate habitats somehow evolve almost exactly the same adaptations. Examples include the particular patterns on butterfly wings and highly similar fish living in separate lakes in Africa...

Watson's focus remains on physical properties (and *not* on fields] that are genetically passed on through a species, but the notion of gene networks containing 'memories' is clearly an idea straight out of the theory of morphic resonance.

In conclusion to this sub-section, morphic resonance is indicative of a process pointing "toward a new kind of science, a new understanding of religion, and a new relationship between humanity and the rest of the living world. It is in harmony with the idea of the earth as a living organism [as in James Lovelock's Gaia theory, which I comment on in Chapter 6] and with the greening of our economic and political attitudes" (1994:5). This is thoroughly good and important news to spread in the context of the ecological crisis.

5.5 Blessed unrest

"Hardt and Negri, quoted by Baer (2012:303), state that "only movements from below" possess the "capacity to construct a consciousness of renewal and transformation". These words – 'renewal and transformation' – are synonymous with the word 'change'. It was seen in Chapter 4 that part of the impact of dominant Promethean characteristics is the prevention of change and instead the perpetuation of the problematic characteristics themselves. Paul Hawken's *Blessed Unrest* (2007) is a book about a movement away from 'the Promethean' and instead towards 'renewal and transformation': "coherent, organic, self-organised congregations involving tens of millions of people dedicated to change" (2007:4). It is a movement constituted by "over one – and maybe even two – million organisations working towards ecological sustainability and social justice" (2007:2). Hawken (ibid) is quick to point out that by conventional standards, "this vast collection of committed individuals does not constitute a movement". Conventional movements "have leaders and ideologies. People *join* movements, study their tracts, and identify themselves with a group. They read the biography of the founder(s) or listen to them perorate on tape or in person. Movements, in short, have followers" (2007:2-3). Here a power hierarchy is discernible, as well as something of a 'herd-mentality' (the 'followers' of a typical movement) that could be easily manipulated by dominant 'authorities'. However, Hawken (2007:3) differentiates between these types of 'movements' and the kind of phenomenon he denotes with the same word:

This movement, however, doesn't fit the standard model. It is dispersed, inchoate, and fiercely independent. It has no manifesto or doctrine, no overriding authority to check with. It is taking shape in schoolrooms, farms, jungles, villages, companies, deserts, fisheries, slums – and yes, even fancy New York hotels. One of its distinctive features is that it is tentatively emerging as a global humanitarian movement arising from the bottom up. Historically social movements have

arisen primarily in response to injustice, inequalities, and corruption. Those woes still remain legion, joined by a new condition that has no precedent: the planet has a life-threatening disease, marked by massive ecological degradation and rapid climate change[;] ... perhaps [this is] the growth of something organic, if not biologic. Rather than a movement in the conventional sense, could it be an instinctive, collective response to threat? ...

From a brief consideration of the above extract from *Blessed Unrest*, the following distinctions between the character of this type of ‘movement’ and that of ‘advanced competitive consumer ‘free-market’ neoliberal Capitalist Democracy’ are already clear:

- Being dispersed versus the ‘concentration’ / monopolisation of Capitalism; constituted by a heterogeneous array of relatively autonomous units versus the homogenised character of neoliberal globalised systems.
- Having no manifesto or doctrine versus the dogmas of dominion-focused Christianity, Promethean Science and Technology, neoliberal ‘free-market’ Capitalism focused on the pernicious and paradoxical concept of endless-growth, and Business-dominated ‘Democracy’.
- Having no authority to ‘check with’ versus the overriding authority of the neoliberal Capitalist state(s) that, via the fractional-reserve monetary system, is always indebted to the reserve bank(s), the ultimate ‘authority’ in current neoliberal Capitalist systems.
- Responding to injustice, inequalities and corruption versus causing them.
- Attempting to ‘respond to’ ecological degradation and climate change versus causing them.
- Potentially resonating with organic processes versus organically-destructive ones.

These points show an obvious distinction between the Orphic and the Promethean. Hawken later (2007:18) says of the movement that in contrast

to the ideological struggles currently dominating global events and personal identity, [the] movement has come into being [and] does not invoke the masses’ fantasized will but rather engages citizen’s localised needs. This movements’ key contribution is the rejection of one big idea in order to offer in its place thousands of practical and useful ones. Instead of isms it offers processes, concerns, and compassion. The movement demonstrates a pliable, resonant, and generous side of humanity. It does not aim for the utopian, which itself is just another ism, but is imminently pragmatic.

He also states (2007:141) that one of “the differences between the bottom-up movement erupting around the world and established ideologies is that the movement develops its ideas based on observation³⁶³, whereas ideologies act on the basis of belief or theory”. From these previous two quotes can be seen obvious contrasts to Promethean systems, most notably the focus on localised needs, the consideration of thousands of ideas, and the act of observation. It was shown in Chapters 2, 3 and 4 that the Promethean characteristics and systems focused on in those chapters all impose a homogenising ‘one-size-fits-all’ approach on communities and ecosystems *by default* (as evidenced in those chapters – think of globalisation and the accompanying spread of the fractional reserve banking industry, monocropping fossil-fuel based agriculture, transport systems, Business-focused Democracy, etc.). The organisations and people involved in the ‘unnamed movement’ Hawken writes about often respond to the issues (which first requires careful observation of causes and effects etc.) that accompany the default systemic and ideological *modus operandii* of neoliberal ‘free-market’ Capitalist Democracy. This is noticeable in the following lengthy (but important) extract from *Blessed*

363 Observation is of central importance in permaculture, as discussed in Chapter 6.

Unrest (2007:11), where the issues that the ‘activists’ are responding to clearly resonate with the issues and ideologies examined in Chapters 1 to 4:

Clayton Thomas-Muller speaks to a community gathering of the Cree nation about waste sites on their native land in Northern Alberta, toxic lakes so big you can see them from outer space. Shi Lihong, founder of Wild China Films, makes documentaries with her husband on migrants displaced by construction of large dams. Rosalina Tuyuc Velásquez, a member of the Maya-Kaqchikel people, fights for full accountability for tens of thousands of people killed by death squads in Guatemala. Rodrigo Baggio retrieves discarded computers from New York, London, and Toronto and installs them in the favelas of Brazil, where he and his staff teach computer skills to poor children. Biologist Janine Benyus speaks to twelve hundred executives at a business forum in Queensland about biologically inspired industrial development. Paul Sykes, a volunteer for the National Audubon Society, completes his fifty-second Christmas Bird Count in Little Creek, Virginia, joining fifty thousand other people who tally 70 million birds on one day. Sumita Dasgupta leads students, engineers, journalists, farmers, and Adivasis (tribal people) on a ten-day trek through Gujarat exploring the rebirth of ancient rainwater harvesting and catchment systems that bring life back to drought-prone areas of India. Silas Kpanan’Ayoung Siakor, who exposed links between the genocidal policies of former president Charles Taylor and illegal logging in Liberia, now creates certified, sustainable timber policies.

The main point of such a long extract is to draw attention to the diversity and size of this unnamed movement that so clearly is polarised from the problematic attitudes, characteristics, ideologies and consequences of ACID. Already stated above is the rough figure of one to two million organisations worldwide; also apparent is the range of organisation types that constitutes it, as seen in the previous extract. Hawken used the website called Wiserearth.org³⁶⁴ at the time of writing his book to ascertain the size of the unnamed movement:

Wiserearth.org was a global village for sharing and kinship-building that was launched on Earth Day 2007 and closed on Earth Day 2014. Wiserearth.org helped the global movement of people and organizations working toward social justice, indigenous rights, and environmental stewardship to connect, collaborate, share knowledge, and build alliances.

Having closed its database in 2014, it is not possible to see the change in numbers of organisations that currently participate in the unnamed movement. However, Hawken included the database category summaries and sizes in his book as an appendix – an appendix that is 107 pages long (2007:195–302). A random opening of the book to one of these pages landed on page 250, which happens to be under the sub-section ‘Greening of Industry’ (2007:248). Here it is shown that (in 2007) there were 4346 listed organisations focused on Recycling and Reuse, 178 on Sustainable Materials, and 258 on Sustainable Production. This is one random page of 107 pages; a continued perusal of the appendix reveals a vast range of sub-sections – energy, fisheries, health, sustainable cities and design, media, work, etc. – all of which have numerous listed areas of focus where the number of associated organisations are tallied; and the numbers are considerable in size.

Hawken provides very clear examples of alternative living practices³⁶⁵ that are associated with the movement (2007:175):

[T]he way to change the world is to change one’s own practices, including one’s home, source of energy, method of agriculture, diet, transport patterns, and communities. ... [Y]ou can’t get there from here by any mechanism that depends on support from institutions that benefit from the

364 www.wiserearth.org accessed 5 May 2015

365 ...practices that feature in permaculture, as discussed in Chapter 6,

status quo. ...[P]eople [must] re-examine how they behave and consume in their own lives. The movement can be seen as weak when measured against large institutions, but its goals are more important. The goal is to create a more resilient social and economic understorey in what is basically an oligarchic world, a powerful act that restores a measure of autonomy and power to citizens.

Individual action is clearly emphasised as being of the utmost importance in responding to the ecological crisis³⁶⁶, while 'institutionalised' (in the Promethean sense) processes are cast into doubt in this regard. This resonates with themes already encountered in Chapter 4, for example, the tendency for citizens to believe that voting is sufficient political action. Voting is theoretically supposed to legitimate the power of government; these movements are all *non-governmental* organisations. As such, there is no leader, as there is in Democratic political systems, where in reality (as opposed to in theory) power flows from the top down. Instead, the movements organise horizontally, so there are many leaders versus followers. *Much* more than mere voting is needed as a response from members of the public, and the organisations constituting the unnamed movement all offer parts of what Hawken calls a resilient "understorey" (Ibid) for people to tap into and thereby gain orientation regarding how to take practical steps towards sustainability.

Hawken (2007:4) offers readers the following thought-provoking comment:

When asked at colleges if I am pessimistic or optimistic about the future, my answer is always the same: if you look at the science that describes what is happening on earth today and aren't pessimistic, you don't have the correct data. If you meet the people in this unnamed movement and aren't optimistic, you haven't got a heart.

'The science' – in the sense of *the data* showing the extent of the ecological crisis – has been touched upon in Chapter 1; what is happening on earth today in Chapters 2, 3 and 4. Chapter 5 has turned towards some of the reasons for optimism in the face of what appears to be catastrophic consequences for climate and ecology during recent decades, as well as during decades and centuries to follow. Hawken (2007:165) elaborates on reasons for optimism:

These groups defend against corrupt politics and climate change, corporate predation and the death of the oceans, governmental indifference and pandemic poverty, industrial forestry and farming, and depletion of soil and water. ... Individuals are associating, hooking up, and identifying with one another. From that meeting and experience they are forming units, inventing again and again pieces of a larger organism, enjoining associations and volunteers and committees and groups, and assembling these into a mosaic of activity as if they were solving a jigsaw puzzle without ever having seen the picture on its box. The insanity of human destructiveness may be matched by an older grace and intelligence that is fastening us together in ways we have never before seen or imagined.

The reference to 'an older grace and intelligence' is a clear link to the ways of thinking and living associated with older cultures, as discussed in the previous sub-section. Hawken's optimism in this regard can be further understood in light of his 'biological' or 'organic' metaphor for the movement, one that is again compatible with ideas associated with older cultures and the Orphic. He writes (2007:141-142),

The movement is that part of humanity which has assumed the task of protecting and saving itself. If we accept that the metaphor of an organism can be applied to humankind, we can imagine a collective movement that would protect, repair and restore the organism's capacity to

³⁶⁶ Individual action is also central to the notion of philosophy as a way of life, which features in the second half of Chapter 7.

endure when threatened. If so, that capacity to respond would function like an immune system, which operates independently of an individual person's intent. Specifically, the shared activity of hundreds of thousands of nonprofit organizations can be seen as humanity's immune response to toxins like political corruption, economic disease, and ecological degradation.

Here is a powerful resonance with a more organic view of life on the planet, one where human beings are seen as part of nature, and accordingly it resonates with 'the Orphic' attitude (Hadot 2008:92) as discussed in the introduction to this chapter. This organic metaphor would be intolerable in strictly reductionist Science, as explored in Chapter 3. To repeat part of an extract that appeared near the start of this sub-section in order to draw explicit attention to the importance of the metaphor, "...perhaps [this was] the growth of something organic, if not biologic. Rather than a movement in the conventional sense, could it be an instinctive, collective response to threat?" This question will end this sub-section and be brought back into focus (indirectly, at least) in the following sub-section, in which I consider Rupert Sheldrake's theory of morphic resonance.

5.6 Sacred Economics

Charles Eisenstein's *Sacred Economics: Money, Gift and Society in the Age of Transition* (2011)³⁶⁷ embodies the perspective of a writer who has thoroughly adopted an Orphic paradigm, a perspective with important implications for what an 'alternative' economy would look like in comparison to the debt-based monetary system of 'advanced' competitive consumer Capitalist industrial Democratic dominion (ACID). The importance of envisioning an alternative economy is explained by Baer (2012:202):

While the powers that be around the world are seeking to address climate change within the parameters of global capitalism, as Simms (2009:184) observes, "global warming probably means the death of capitalism as the dominant organising framework for the global economy." Thus, it is imperative to think outside the box and construct an alternative to global capitalism as the ultimate climate change mitigation strategy, even though it will not be achieved any time, if indeed ever.

Eisenstein's use of the word 'sacred' in the book's title is an immediate hint that he advocates an alternative economy; there is nothing sacred about global Capitalism's debt- and growth-based economy, as evidenced by its ubiquitous negative ecological impacts (See Chapters 1 to 3). Eisenstein states early on in the text that the purpose of the book is "to make money and human economy as sacred as everything else in the universe" (.pdf pg. 5). This clearly implies that Eisenstein views the universe and its content as 'sacred', something that is completely incompatible with the materialist, reductionist, and consumer-Capitalist characteristics (as well as all the other Promethean characteristics) explored in Chapter 3 of this study. His opposition to Promethean characteristics can be seen in the following quote, as well as what he means by the word 'sacred', and further what kind of economic system he raises issue with; he writes (.pdf pg. 9) that 'the sacred' is

the gateway to the underlying unity of all things, [and] it is equally a gateway to the uniqueness and specialness of each thing. A sacred object is one of a kind; it carries a unique essence that cannot be reduced to a set of generic qualities. That is why reductionist science seems to rob the world of its sacredness, since everything becomes one or another combination of a handful of

³⁶⁷ Note that the free online (.pdf format) version of the book will be used in this sub-section. This seems more in keeping with the spirit of Eisenstein's general analysis, which will be explored here. Source: <http://sacred-economics.com/wp-content/uploads/2012/01/sacred-economics-book-text.pdf> accessed 22 June 2015

generic building blocks. This conception mirrors our economic system, itself consisting mainly of standardized, generic commodities, job descriptions, processes, data, inputs and outputs, and — most generic of all — money, the ultimate abstraction.

The reference to reductionist Science speaks for itself; the view of the world as something consisting of “generic building blocks” is synonymous with Heidegger’s analysis of Technology (and by association, Capitalism) reducing ‘nature’ to a ‘standing reserve’ of ‘resources’ (see Chapter 3); the economic system referred to is the debt-based fiat currency monetary system, a central globalized mechanism that drives the ecological crisis, as explored in Chapters 2 and 3 above³⁶⁸. Eisenstein therefore can be said to be motivated by similar issues to those that were explored in at least the first three chapters of this study, and the analysis conducted in *Sacred Economics* leads to several intriguing approaches that are useful for what can loosely be called the furthering of the ecologically-respectful Orphic agenda. Eisenstein summarises several of these approaches in Chapter 17 of *Sacred Economics*³⁶⁹ (.pdf pp.228–237): 1. negative-interest currency; 2. elimination of economic rents, and compensation for depletion of the commons; 3. internalisation of social and environmental costs; 4. economic and monetary localisation; 5. the social dividend; 6. economic degrowth; 7. gift-culture and P2P economics. He points out (.pdf pg. 237) that “all of the seven elements I have described are tightly synergistic. Indeed, none can stand on its own”. Nevertheless, due partly to its direct relevance to the focus on ecology that pervades this study, and partly due to space constraints, only one of these seven ‘elements’ will be looked at in some depth in this sub-section, element number three, which will then be linked to a selection of relevant pertinent ideas explored by Eisenstein.

The notion of internalizing of costs will here be approached by first considering its opposite, namely the externalizing of costs. Externalized costs are ones “that someone else pays” (.pdf pg.195):

For example, one reason vegetables from California’s Central Valley are cheaper to buy in Pennsylvania than local produce is that they don’t reflect their full cost. Since producers are not liable to pay the current and future costs of aquifer depletion, pesticide poisoning, soil salinization, and other effects of their farming methods, these costs do not contribute to the price of a head of lettuce. Moreover, the cost of trucking produce across the continent is also highly subsidized. The price of a tank of fuel doesn’t include the cost of the pollution it generates, nor the cost of the wars fought to secure it, nor the cost of oil spills. Transport costs don’t reflect the construction and maintenance of highways. If all these costs were embodied in a head of lettuce, California lettuce would be prohibitively expensive in Pennsylvania. We would buy only very special things from faraway places. (Ibid)

This illustration refers to numerous ecological issues that were explored previously in this study — water issues, soil issues, pesticide poisoning, pollution, and transport systems. Eisenstein is making the direct link between an economic approach, namely Capitalism’s externalisation of costs, and the kinds of ecological issues already looked at. One could call the results of such externalisation of costs ‘ecological debts’ — this is unsurprising, considering that the monetary system that has historically accompanied such externalisation is a *debt-based* system, as explored at the end of Chapter 2. As explored in that chapter and in Chapter 3, Capitalist fiat currency is a purely quantitative index, and is linked to the reduction of nature into a standing reserve of resources to be extracted for anthropocentric purposes (à la Heidegger). One can literally put a quantitative fiscal price on the ‘resources’, but such a figure is inherently divorced from the wider ecological impact that the

368 In Chapter 2 the topic of fiat money is dealt with in sub-section 2.9. In Chapter 3 subject of money is again examined in sub-section 3.5.

369 The different approaches are each extensively explored in earlier chapters of the book.

'resource' extraction and processing entails. Eisenstein is accordingly a harsh critic of the dominant debt-based fiscal monetary system, and spends the first section of his book exploring various problematic features thereof.

Eisenstein describes the obvious alternative to externalizing costs: the internalisation of costs. The "internalization of all costs is simply the economic embodiment of that principle of interbeingness: 'As I do unto others, so I do unto myself'" (.pdf pg.126). Kovel (2007:16) puts this idea into the broader context of 'nature': "It is the essential nature of ecosystems for each to be bounded and internally related, on the one hand, and connected to all other ecosystems, on the other. Thus nature, which we read at this end, may be defined as the integral of all ecosystems". The internalisation of costs is one characteristic of a sacred economy – a sacred economy "is an extension of the ecology and obeys all of its rules, among them the law of return" (.pdf pg.124). Eisenstein (Ibid) describes the law of return as follows:

In an ecology, no species creates waste that other species cannot use – hence the maxim, "Waste is food." No other species creates growing amounts of substances that are toxic to the rest of life, such as dioxin, PCBs, and radioactive waste. Our linear/exponential growth economy manifestly violates nature's law of return, the cycling of resources.

In *Cradle to Cradle*, McDonough and Braungart make exactly the same point; indeed, a chapter in the book (2002:92-117) is called 'Waste equals food'. In the example above of the Californian lettuce in Pennsylvania, application of the internalisation of costs principle would quite simply mean that one would eat local organic lettuce rather than the one trucked in from afar. In the debt-based money system, this may mean initially paying more for the local organic lettuce. However, Eisenstein states in *Sacred Economics* that the debt-based Promethean monetary system is reaching its end³⁷⁰, and offers numerous alternative means of economic interaction. These alternatives cannot be explored here, but the following from Eisenstein (.pdf pp.132–133) will be offered in order to convey the Orphic character of his approach; here he is describing the notion of a commons-backed currency:

Once we have decided how much of each commons should be made available for use, we can issue money 'backed' by it. For example, we might decide that the atmosphere can sustain total sulfur dioxide emissions of two million tons a year. We can then use the emissions rights as a currency backing. The same goes for the rest of the commons. The result would be a long list comprising all the elements of the commons we agree to use for economic purposes. Conceptually, it might look something like this: Our money derives its value from the right to harvest 300,000 tons of cod from the Newfoundland cod fishery, the right to draw 30 million gallons of water monthly from the Ogallala Aquifer, the right to emit 10 billion tons of CO₂, the right to pump 2 billion barrels of oil from the ground, the use of the X-microhertz band of the electromagnetic spectrum...

The above extract is an illustration of a commons-backed currency at work, and is notably unlike purely quantitative debt-based currency familiar in Promethean worldviews where nature is reduced to a standing reserve of resources. A commons-backed currency is determined not by the value of resource extraction, but rather by prioritizing the quantitative *and* qualitative well-being of nature as something with which human beings commune. The latter worldview holds that nature offers gifts to human beings, gifts that human beings can accept only with a strong sense of responsibility.

370 "Today, it seems, we are reaching the limits of growth, and therefore the end of humanity's childhood." (.pdf pg. 68) "What we see with alarm as an exponential growth curve is actually part of a phase transition curve." (.pdf pg. 175)

Eisenstein frequently mentions a 'gift culture'; some of its characteristics can be discerned below (.pdf pf.126), where the relevance of the internalisation of costs is again touched upon:

Internalizing costs also reflects the perceptions of a gift culture. In the circle of the gift, your good fortune is my good fortune, and your loss is my loss³⁷¹, because you will have correspondingly more or less to give. From that worldview, it is a matter of common sense to include damage to society or nature on the balance sheet. If I depend on you for the gifts you give me, then it is illogical to enrich myself by impoverishing you. In such a world, the best business decision is the one that enriches everybody: society and the planet. A sacred economy must embody this principle, aligning profit with the common weal.

Eisenstein's vision of what a sacred gift economy looks like is well illustrated in his *Sacred Economics*, and all of its 300+ pages need to be considered for any justice to be done when discussing what a sacred economy entails. Eisenstein (.pdf. pg.132) does offer a glimpse of his vision in the following; note that this extract addresses the role of government in a Sacred Economy, a role that seems fitting for government considering the issues raised with it in Chapter 4:

Ultimately, I envision decentralized, self-organizing, emergent, peer-to-peer, ecologically integrated expressions of political will. Parallel to this, I envision an ecology of money as well, an economic system with many complementary modes of circulation and exchange. Among them will be new extensions of the gift, freeing work from compulsion and guaranteeing the necessities of life to all. Whatever form it takes, an essential purpose of government — maybe the essential purpose of government — is to serve as the trustee of the commons. The commons includes the surface of the earth, the minerals under the earth, the water on and under the ground, the richness of the soil, the electromagnetic spectrum, the planetary genome, the biota of local and global ecosystems, the atmosphere, the centuries-long accumulation of human knowledge and technology, and the artistic, musical, and literary treasures of our ancestors.

5.7 The Occupy Movement

Numerous aspects of the Occupy Movement of 2011 and 2012³⁷² point toward resonance with the Orphic attitude, and towards direct resistance to aspects of purely Promethean paradigms. One of the main catch-phrases of the Movement was/is³⁷³ "We are the 99%", words that signify an awareness of the significantly uneven distribution of wealth that has been brought into existence via the globalization of ACID and its debt-based monetary system. Focusing just on North America, for example, a Guardian.com³⁷⁴ online newspaper report of late 2011 states that "the richest 1% of the US population... own[s] a third of US net worth". In a 2017 Oxfam report³⁷⁵ called 'An economy of the 99%', the attention is drawn to the following disproportion in wealth: just "eight men own the same wealth as the poorest half of the world". It tends to be the case that such statistics vary somewhat according to source, which is expectable considering the various different indices that can be taken into account when working out such a challenging statistic, but regardless of the differences between the various attempts to work out the exact statistics, the conclusion is unavoidable: the top 1% of the 'super-rich' and 'super-wealthy' of North America (and indeed the

371 As a side note, these words – "your good fortune is my good fortune, and your loss is my loss" – are frequently used when talking about African Ubuntu.

372 The tents and camps that were explicit symbols of the Occupy Movement when it was manifesting in places like Wall Street and around St Paul's Cathedral in front of the London Stock Exchange may no longer be erected, but as will be seen in this sub-section, the spirit of the phenomenon lives on.

373 The activity at these sites suggests that the movement is on-going: <http://www.occupytogether.org/> and <http://www.occupy.com/> both accessed 13 August 2015.

374 <http://www.theguardian.com/news/datablog/2011/nov/16/occupy-protests-data-video> accessed 16 July 2015

375 https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-economy-for-99-percent-160117-summm-en.pdf accessed 7 February 2017

world) own and control more wealth and assets than the vast majority of the world's population combined. The Occupy Movement was partly a response to such a skewed distribution of the world's wealth, but more importantly, the movement was responding to the ethically reprehensible consequences of various actions of the super-elite and super-wealthy, actions and consequences that have had global economic impacts that further benefit the 1% but deteriorate living conditions for 'the 99%'. These issues are evident in what one of the official 'Occupy' webpages³⁷⁶ says about the movement: 'Occupy' was/is

fighting back against the corrosive power of major banks and multinational corporations over the democratic process, and the role of Wall Street in creating an economic collapse that has caused the greatest recession in generations. The movement is inspired by popular uprisings in Egypt and Tunisia, and aims to fight back against the richest 1% of people that are writing the rules of an unfair global economy that is foreclosing on our future.

An example of problematic actions perpetrated by what the Occupy Movement interchangeably called 'the 1%', 'Wall Street', 'banksters' or 'Corporations', was the economic crisis that started in 2008. Members of the Occupy Movement frequently point out that the crisis was orchestrated by the banking sector, a sector in which highly instrumental players of 'the 1%' reside. The economic crisis of 2008 is a complicated matter, but there are some very clear reasons for why it occurred, as summarised in the abstract of a 2009 paper by Michele Fratianni and Francesco Marchionne called 'The Role of the Banks in the Subprime Financial Crisis'³⁷⁷:

[L]arge default rates on subprime mortgages cannot account for the severity of the [2008 financial] crisis. Rather, low-quality mortgages acted as an accelerant to the fire that spread through the entire financial system. The latter had become fragile as a result of several factors that are unique to this crisis: the transfer of assets from the balance sheets of banks to the markets, the creation of complex and opaque assets, the failure of ratings agencies to properly assess the risk of such assets, and the application of fair value accounting. To these novel factors, one must add the now standard failure of regulators and supervisors in spotting and correcting the emerging weaknesses. (2009: 1)

The above is support from the academic world of research that supports some of what was explored in *Inside Job*, a documentary that traces the role of the banks in the economic crisis. As stated in a Guardian.com³⁷⁸ article, *Inside Job* focuses on a "villainous lineup that includes bankers, politicians (many of whom were previously bankers)³⁷⁹, regulators, the credit ratings agencies and academics". The article states that there "are plenty of economists who believed the banks understood what they were doing and supported deregulation". The details of these kinds of issues are beyond the scope of this study, but one thing is obvious: when the banking industry falters – and *Inside Job* shows that the faltering of the banks prior to the 2008 crisis was *deliberately orchestrated* – it is the general public that has to 'bail it out', as pointed out by the academics Fratianni and Marchionne (Ibid): "the crisis persists and governments continue to inject vast amounts of public funds into banks". In light of the 2008 financial crisis, David Harvey, in his *Enigma of Capital*, traces the development of the process by which policy has been structured to give the banks 'a free ride', so to speak, one paid for with public funds. He clearly agrees (2010:10-11) that the 'behaviour' of the

376 <http://occupywallst.org/about/> accessed 29 July 2015

377 <http://docs.dises.univpm.it/web/quaderni/pdfmofir/Mofir023.pdf> accessed 16 July 2015

378 <http://www.theguardian.com/film/2011/feb/17/inside-job-financial-crisis-bankers-verdicts> accessed 16 July 2015

379 This point – that many politicians were previously bankers – speaks volumes for what was explored in sub-section 4.3. about the marriage between business and politics.

banks is incredibly problematic, and makes observations that clearly resonate with several focal areas of this study:

One of the basic pragmatic³⁸⁰ principles that emerged in the 1980s, for example, was that state power should protect financial institutions at all costs. This principle, which flew in the face of the non-interventionism that neoliberal theory prescribed, emerged from the New York City fiscal crisis of the mid-1970s. It was then extended internationally to Mexico in the debt crisis that shook that country to the core in 1982. Put crudely, the policy was: privatise profits and socialise risks; save the banks and put the screws on the people (in Mexico, for example, the standard of living of the population dropped by about a quarter in four years after the financial bail-out of 1982). The result was what was known as 'systemic moral hazard'. Banks behave badly because they do not have to be responsible for the negative consequences of high-risk behaviour. The current bank bail-out [i.e. the one that 'exploded' in 2008] is this same old story, only bigger and this time centred in the United States.

This is all indicative of an economic system structured to favour the rich, and various issues from sub-section 4.3. come to the forefront, for example, that the realm of politics is indistinguishable from the realm of big Business, as expressed by Noam Chomsky's observations about there being only one party, the 'Business party'. Members of the Occupy Movement rejected this type of Democracy, and actively experimented with a direct participatory democracy, as pointed out by Ian Buchanan in his contribution³⁸¹ to *Occupy: A People yet to Come* (2015), edited by Andrew Conio. Buchanan (2015:193) says that the Occupy Movement's

production was an example of participatory democracy in action – the set of principles the occupiers wanted to live by was created and embraced by the occupiers themselves. All proposals required the support of at least 90% of the General Assembly in order to be ratified, which is far more onerous than parliamentary democracies anywhere else requires. And of course that was precisely the point: it demonstrated that democracy as we know it, that is, democracy as it is practiced in the United States and elsewhere is a pale shadow of 'true' democracy, which is open to all and premised on the notion that only near-consensus can be regarded as representative of the will of the people. As impractical as this model of democracy might be, its symbolic value should not be underestimated. It bespoke a powerful hunger for social justice, for a political and economic system that represents the needs of the many not the greed of the few that not even President Obama could fail to perceive.

Furthermore, members of the Occupy Movement share/shared an acute awareness of the issue in sub-section 2.9, namely the issue of how the phenomenon of endless growth is inherent in a Capitalist debt-based monetary system and the impact such continued growth has on the environment. The following from forbes.com³⁸² reveals the views of a prominent academic who took part in the Occupy movement; the themes and issues alluded to have been explored in earlier sub-sections of this study:

For too long, Wall Street has been occupying the offices of our government, and the cloakrooms of our legislatures," wrote Bill McKibben, co-founder of 350.org, in an email to supporters before the march. "They've been a constant presence, rewarded not with pepper spray in the face but with yet more loopholes and tax breaks and subsidies and contracts. You could even say Wall Street's been occupying our atmosphere, since any attempt to do anything about climate change

380 Exclusive pragmatism has already been identified in this study as a characteristic indicative of the Promethean attitude. I contend that the principle to which Harvey refers is exclusively pragmatic, considering the 'instrumentality' it implies at the expense of the inherent 'wellness' of the people who suffer due to actions based on the principle.

381 His contribution is an essay called 'September 17, 2011: Occupy without Counting', pp. 191-202

382 <http://www.forbes.com/sites/eco-nomics/2011/10/07/environmentalists-join-the-occupy-wall-street-fray/> accessed 16 July 2015

always run afoul of the biggest corporations on the planet. So it's a damned good thing the tables have turned.

This comment by McKibben was made in 2011, during the height of the occupation of places like Wall Street by members of the Occupy Movement. However, McKibben's final remark – that the tables have turned – did not refer to an 'immediate' event, as the comment seems to suggest, because since then, as stated in a Guardian.com³⁸³ article of July 2015,

in the absence of any alternative model³⁸⁴, the conditions for another crisis are being assembled. ... The shadow banking system has been reassembled, and is now bigger than it was in 2008. New rules demanding banks hold more reserves have been watered down or delayed. Meanwhile, flushed with free money, the 1% has got richer.

The title of the article from which the above quote is taken is 'The End of Capitalism has Begun', a title that reveals a sentiment with which the Occupy movement in general certainly agreed. McKibben's remark about the tables turning, then, must be understood in the sense of the 'end of Capitalism' being a process rather than being one exact event. In some ways, the Occupy Movement can be seen as the biggest and most influential uprising in history, and the impact of the movement has been widespread. In an interview³⁸⁵, David Harvey has said the following about the widespread impact of 'the Movement':

I credit the Occupy movement with sparking that new conversation – a conversation that highlights the wealth inequalities all over the world. ... It's interesting that everybody knows what you're talking about when you mention the "one per cent". The issue of the one per cent is now on the agenda and given depth by studies like that of Thomas Piketty, in his book *Capital in the Twenty-First Century*. Joseph Stiglitz has a book on inequality, too, and several other economists are talking about it. Even the IMF is now saying that there is a danger that follows when inequality reaches a certain level. Even Obama is saying it. But Obama wouldn't have said it if Occupy hadn't done so first.

Harvey does point out, however, that as far as actual policy goes – as in policy from the governmental sphere that has direct implications for what is permissible in terms of corporate action that furthers economic inequality, ecological degradation, etc. – little is being done. The reasons for such inaction from the political sphere are clear when one considers the content of Chapter 4, sub-section 4.3, which is about the 'marriage' of Business and politics. The Occupy Movement may not have had an impact when it comes to the major political changes that would help to diminish the pernicious effects of Promethean corporatism, but certainly 'the Movement' can be credited with raising near-global awareness about the purely Promethean attitudes, phenomena, and mechanisms (a fact that should be considered alongside section 5.2 above, namely 'Blessed unrest') and furthering the search for Orphic 'alternatives'.

I have just mentioned a search for Orphic alternatives, a search the Occupy Movement has assisted in, especially with regard to raising awareness about 'alternatives' and the need to pursue them. In this light, two references need to be made. The first comes from the book already mentioned in this sub-section, *Occupy: A People yet to Come (2015)*, edited by Andrew Conio. In the introduction to the book, Conio writes the following, which elaborates appropriately on the notion of the Occupy Movement having sparked a new conversation (as mentioned by Harvey, above):

383 http://www.theguardian.com/books/2015/jul/17/postcapitalism-end-of-capitalism-begun?CMP=share_btn_link accessed 29 July 2015

384 At this point in this study, it should be clear that Promethean mechanisms prevent alternative models from arising.

385 <http://www.prospectmagazine.co.uk/blogs/jonathan-derbyshire/the-contradictions-of-capitalism-an-interview-with-david-harvey> accessed 29 July 2015

The Occupy movement... created a new environment in which discussions that might once have seemed impertinent have been gaining a new traction. 'Occupy' is a synecdoche for belief in the revolutionary transformation of the capitalist system: a new heterogenic world of protest and activism that cannot be thought in terms of the state, liberal Democracy, parliamentary systems, or the hugely compromised nongovernmental organisation (NGO) sector. Nor can Occupy be conceived in terms of class war or vanguard politics. These conceptualisations do not articulate fully where power is held, nor from where revolution may issue. A philosophical vocabulary that would materially inhabit the conditions of our present global world order is needed because the different registers of ontology (the movements of the earth), the social (the people yet to come), epistemology (concept formation), and aesthetics are nevertheless activated on the one single plane that is at considerable remove from the conventional terms of state or royal politics as they are understood today.

The second reference is to something Manuel Castells says in response to a question asked to him in an interview led by Paul Mason. The interview is mainly about themes raised in the book *Aftermath: The Cultures of the Economic Crisis*, edited by Manuel Castells, J. Caraca and G. Cardoso. This is Castells' response to a question by Mason about how 'big' this cultural change (of which 'Occupy' is a part) is; I will conclude this sub-section with this lengthy, but appropriate, quote – the large number of overlaps with other central focal areas of this study should be clear:

It is fundamental because it triggers a crisis of trust in the two big powers of our world: the political system and the financial system. People don't trust where they put their money and they don't trust those who they delegate in terms of their vote. All the statistics are there. It's a dramatic crisis of trust and if there is no trust, there is no society. It's simply institutions that still try to control citizens. But the main thing is the acceptance in their minds because nothing else is possible. So what we are not going to see is the economic collapse per se because societies cannot work in a social vacuum. If the economic institutions don't work, if the financial institutions don't work, the power relations that exist in society change the financial system in ways favoured to the financial system and it doesn't collapse – people collapse, not the financial system. Then people realise two things: first, this financial system was built on completely unreliable mathematical models in fact, with the implication that we don't count there; second, when we use the institutions that we have to control the financial system, to change it, to re-equilibrate it, the notion is the banks are going to be alright, we are not going to be alright...

5.8 The Zeitgeist Movement

The Zeitgeist Movement (TZM) must be mentioned here due to its insightful analysis of 'advanced' competitive consumer-Capitalist industrial Democratic dominion (ACID), as well as due to the broad type of alternative it proposes, namely, a 'natural law / resource based economy' (NLRBE). TZM has been in existence, formally at least, since the release of the first Zeitgeist documentary-style film in 2008. Two further feature film length documentary films ensued in later years, the second of which firmly established the academic appeal of the movement due to the formidable number of relevant and academically-reputable socio-political and economic ideas that arise (explicitly and implicitly) in its analysis³⁸⁶. An online community developed, followed by physical meetings of TZM supporters. The founder of the movement, Peter Joseph, continued to produce online lectures and radio talks in the years following 2008; numerous members of the movement followed in Joseph's footsteps and became activist speakers at public events. Two such events are 'Z-Day' and 'The Zeitgeist Media

³⁸⁶ The latest electronic text that 'defines' the movement (see next footnote) contains 884 footnotes, most of which are references to external sources.

Festival', where the aim of the events and indeed the movement as a whole can be seen in the following, taken from *The Zeitgeist Movement Defined: realising a new train of thought* ³⁸⁷ (pg.5):

TZM expresses itself through targeted, rational educational projects that work not to impose, dictate or blindly persuade, but to set in motion a train of thought that is logically selfrealizing when the causal considerations of "sustainability" and "public health" are referenced from a scientific perspective.³⁸⁸

The starting point for TZM is a scathing analysis of the shortcoming of ACID and the systemic mechanisms that perpetuate it. The primary mechanism is the fractional reserve monetary system³⁸⁹ (see sub-section 2.9 of this study) and its consequence of requiring perpetual fiscal growth³⁹⁰ at the expense of the wellbeing of people and the planet³⁹¹ (see sub-section 3.5 of this study). In *TZM Defined*, such pernicious effects of 'the system' are referred to as "structural violence"³⁹² (pg.9),

illuminating a broad spectrum of built in suffering, inhumanity and deprivation that is simply accepted as normality today by an uninformed majority. This context of violence stretches much farther and deeper than many tend to consider. The scope of how our socioeconomic system unnecessarily diminishes our public health and inhibits our progress today can only be recognized clearly when we take a more detached technical or scientific perspective of social affairs, bypassing our traditional, often blinding familiarities.

TZM acknowledges the pivotal role that technology plays in ACID's structural violence; for example, TZM has drawn repeated attention to the insanity of consumer Capitalism's 'planned obsolescence'³⁹³, which is the deliberate design of consumer goods to break after a certain period of time in order to encourage more public purchasing of consumer goods, in a context where Earth has finite resources and a finite ability to deal with the blowback of such resource-use and waste. Planned obsolescence is an example of the technology industry 'applying Science' under the (mis)guiding hand of the consumer-Capitalist 'free' market. TZM insightfully does not place blame on the corporations or companies (and the like) for things like planned obsolescence³⁹⁴, but instead identifies them as consequences of market logic, in the sense of a Capitalist economy that demands endless growth:

Generally speaking, the resolution of problems and hence increasing of efficiency is, in many ways, anathema to the market's operation. Solving problems in general means no more ability to gain income from the 'servicing' of those problems. New efficiencies almost always mean a reduction of labor and energy needs and while that may seem positive with respect to true

387 http://www.thezeitgeistmovement.com/uploads/upload/file/19/The_Zeitgeist_Movement_Defined_PDF_Final.pdf pg. 5 accessed 6 August 2015

388 TZM extensively refers to the scientific method, as well as technology, and the roles that these must play in a natural law / resource based economy (NLRBE). More will be said about this below in light of the various issues raised in in Chapter 3 of this study concerning the difference between TZM's approach to science and technology and the Promethean approach to science and technology.

389 To illustrate, consider this from TZM Defined, pg. 300: "Since all money is created out of debt and loaned with interest attached – interest that actually doesn't exist in the money supply outright – there is always more global debt in existence than money to pay for it."

390 See footnote 274 of TZM Defined, pg. 90: "The creation of money out of debt, coupled with its multiplication via the Fractional Reserve lending system, a near universal practice of the central banks of the world, continues to seek infinite growth by its very mechanics" – this phenomenon is directly explored in sub-sections 2.9. and 3.5.

391 See TZM Defined, pg. 98: "In short, when it comes to market logic, the more turnover or sales, the better - and that is that - regardless if the item sold is credit, rocks, "hope" or flapjacks. Any pollution, instances of waste or other such detriments are, again, 'external'."

392 See footnote 7 on page 9 of TZM Defined for more about 'structural violence'.

393 See TZM Defined pg. 100, including the footnotes.

394 As is hinted at in the following in TZM Defined, pg. 305: "This... isn't to say anyone is "bad", but rather to note that any system which has the capacity to even create such extreme wealth imbalance, in and of itself, needs to be addressed as the root problem it is..."

earthly efficiency, it also often means a loss of jobs and reduction of monetary circulation upon its application...

Technology in the context of market 'efficiency' is therefore *one* manifestation of technology, a manifestation that is coterminous with what Heidegger discusses as 'The Enframing' (see sub-section 3.3) where nature is reduced to a 'standing reserve' of resources for humans to use, largely for the furthering of ACID's expansion. In TZM, technology in the sense of The Enframing is called 'market efficiency' (*TZM Defined*, pg.112):

This 'efficiency' inherent to capitalism operates without any respect for the social or environmental costs of its process to keep cyclical consumption and profit going and the world you see around you – full of ecological disorder, human deprivation and general social and environmental instability – has been the result.

The following (*TZM Defined*, pg.291) draws clear attention to the type of Techno-Science that is associated with The Enframing:

[It] can... be used locally and narrowly, within the context of the distorted incentive structure the market perpetuates, to create and accelerate destructive and inhumane consequences. The atomic bomb is one extreme of this reality. Our increased, high-tech capacity to more efficiently destroy biodiversity, over use our resources and pollute, is another.

But there is a clear distinction made between the use of Technology as per The Enframing, and the earlier stated 'true earthly efficiency' – the latter approach to technology is clearly less anthropocentric, but does cater for human needs as a priority. TZM identifies that technology can be applied in ways that are notably Orphic, as per the broad scope of the Orphic attitude discussed at various times during this study and which can be seen at play in the following from *TZM Defined* (pg.112):

technical efficiency, which one could characterize as, in fact, a hindrance to market efficiency, seeks to maintain the environment, maintain human health and essentially keep balance in the natural world. The reduction of waste, resolution of problems and the maintaining of alignment with natural law is the common sense logic embodied.

The end goal then is a human economy that understands the carrying capacity (*TZM Defined*, pg.178) of Earth, and employs technology to "move from a scarcity-preserving economy to a system of direct resource management and scientific application in the pursuit of a post-scarcity or abundance economy to meet the needs of the human species, while securing the integrity of the habitat" (*TZM Defined*, pg.308). Such a sustainable techno-social system would spread ecologically-sensitive values by rewarding "conservation, balance, social contribution and ecological respect" (*ibid*). These are clear Orphic qualities.

A common question asked in response to a system such as the one envisioned by TZM is, *who makes the decisions?* The concern here is that despite automation of the system, *people* still have to direct machines to achieve given ends. The short answer is that no decisions are made, but rather 'arrived at' (*TZM Defined*, pg.317-318) according to the technical parameters of a given environment. Nobody needs to 'decide' that organic, locally-grown food is better (ecologically and nutritionally) than food shipped in from another country – the CO2 and petrochemical emissions data 'decide'.

This type of ‘emergence’ thinking³⁹⁵ – a *technical* process – is evident in the following from *TZM Defined* (pg.318):

For example, different terrains have different propensities for settlement, while the location of renewable energy sources demands that harvesting exist in certain places. If production of a particular genre of goods requires certain materials and those materials happen to be local, it is logical to construct production facilities as close as possible to the extraction source. Likewise, any other attributes of the supply chain are best allocated using the same logic, including the means of distribution. Distribution centers would naturally be close to large city centers where the population has easy access within short distances. Furthermore, the creation of parks, recreation and the like becomes self-evident as well... In short, this process of logically deducing [for example] topographical placement to maximize efficiency and sustainability is a technical process overall.

TZM advocates the design of new city complexes according to the technical approach touched upon above – these cities would be NLRBEs, where the goal is to “optimize technical efficiency and create the highest level of abundance possible, within the bounds of Earthly sustainability, seeking to meet human needs directly” (*TZM Defined*, 253). TZM has since its inception as a movement been very specific about how such alternative cities would function, and how people would live in such cities – *TZM Defined* outlines such details succinctly (pp.250-288). Some details about how a NLRBE city would function, as well as a glimpse of what life could entail in such a city, are evident in the following and final paragraph of this sub-section (all references are from *TZM Defined*):

The vast majority of tasks necessary for the running of the system are automated (pg. 247). Food is made abundant via regional automated food production methods, e.g. vertical farm technology and low energy/low impact cultivation methods such as hydroponics, aquaponics and aeroponics (179-186). Sustainable resources are locally sourced (207-209), and there is an abundance of electricity via renewable-energy sources (192-207). Participatory democratic processes take place via digital communication methods “that can bring the interests of the whole community into calculation” (pg. 252) – the ‘calculation’ is a process of technically determining whether or not a particular human interest is achievable within “basic sustainability principles needed to operate with generational longevity, whilst also maintaining a vigilant focus on producing the most strategically necessary goods at the peak technical capacity known at the time of production” (Ibid). A NLRBE is therefore an “advanced production, distribution and management system, which is democratically engaged by the public, through a kind of “participatory economics” – it is not centrally planned³⁹⁶, but rather “a Collaborative Design System (CDS)³⁹⁷. It is based entirely upon public interaction, facilitated by programmed, open-access systems, that enable a constant, dynamic feedback exchange that can allow for the input of the public on any given industrial matter, whether personal or social” (pg.253). This is a system “predicated entirely upon the intelligence of the ‘group mind’ and the open source/open access sharing virtue will help bring all viable interests to the surface for public consideration, in an absolutely transparent manner” (Ibid). Such a quasi-utopian state is possible because, at the outset, NLRBE cities have been designed to provide all of the physical necessities of

395 See ‘Tradition to Emergence’ at <http://www.thezeitgeistmovement.com/orientation> accessed 10 August 2015

396 ACID economics is centrally planned by the Market.

397 Further information in this regard: “The starting point for interaction in a NLRBE is the CDI, or collaborative design interface. The CDI could abstractly be considered the “new “market” or the market of ideas or designs. Design is the first step in any production interest and this interface can be engaged by a single person; it can be engaged by a team; it can be engaged by everyone. It is open source and open access and it would come in the form of an online web interface” (*TZM Defined*, pg. 258).

human existence – food, water, shelter, transport, etc. – via automated means, eradicating conflict, scarcity and imbalance that TZM identifies as being at the heart of the vast majority of social ills³⁹⁸. People would not need to work to pay for the necessities of life, leaving them free to apply themselves to tasks of their own choosing³⁹⁹, acting fully in the knowledge that anything in their own interest is in the interest of the whole system, and vice versa – “personal interest becomes directly tied to societal interest” (pg.260) – and as a consequence, in the interests of sustainability for non-human life as well: “this computer-aided design and engineering process does not exist in a vacuum; it does not process designs with no input as to the current state of the planet and its resources. Connected to the design process, literally built into the noted ‘Optimize Design Efficiency’ function, is dynamic feedback from an Earth-wide accounting system that gives data about all relevant resources that pertain to all productions”. People are essentially free to do what they like in a context where human values are intimately tied to societal and ecological well-being – this may mean that people choose to spend large percentages of their time participating in the running of the system⁴⁰⁰ or expanding the bank of sustainable designs for manufactured items; or it may mean, simply, finding “interesting things to do and explore” (pg.271).⁴⁰¹

5.9 Deep ecology

An appropriate starting point for this sub-section is the distinction drawn by Arne Naess (2008:99-100) between the shallow and deep ecological movements. Shallow ecology, Naess observes (Ibid), has “started to have an impact on the government level. Environmental organisations are listened to, and their advice has occasionally been used in practice. But future generations of nonhumans seem to be valued publicly only for the sake of future humans”. Naess is clearly describing an instrumentalist approach to valuing nature, and a strong anthropocentric focus is evident – both instrumental value and anthropocentrism were identified in Chapter 3 as Promethean and problematised in the context of the ecological crisis. Naess then contrasts shallow ecology to deep ecology in a manner where it is instantly clear that the latter functions in the realm of the Orphic; he speaks (2008:100) of the ecological goal of “the protection of the planet and its richness and diversity of life *for its own sake*” (Naess’ emphasis) – valuing nature ‘for its own sake’ is simply another way of describing the valuing of nature for its inherent value, an Orphic trait, one that is frequently the nexus of the deep ecology movement. Naess states further (2008:102) that the “all-around maturity of humans facilitates acts of identification with every kind of living being”, which, of course, implies a lack of maturity in the arena of ACID, which (based on my analysis of ACID in Chapter 4), lacks any sense of identification with living beings, and instead promotes the idea of a hierarchy of being in which humankind is elevated to the highest rung (Christianity also advocates

398 See ‘Origins and Influence’ at <http://www.thezeitgeistmovement.com/orientation> accessed 10 August 2015

399 See TZM Defined pp.271-272 for answers to the common questions that arise about life in a post-scarcity NLRBE, namely, “What will people do?” and “Who is running the machines for no pay?”

400 On pp.271-272 numerous examples are cited to show that many human beings are inclined to apply themselves in voluntary work ‘for the greater good’ without the need for monetary or material reward. The only example (of several) that will be mentioned in passing here is that of the Linux computer operating system – which is the OS that is running the computer on which this Ph.D. is written – “Linux, which started in 1991 as a simple experiment, was able to complete its community-driven, almost moneyless programming development in just three years. Linux has over 10,000 lines of code and the vast amount of its creation was done for free by a global community.”

401 Note that in TZM Defined (pp.305-314), several scenarios are outlined to explain how transition to a NLRBE would work, the details of which are beyond the scope of this sub-section.

such a hierarchy where humans are pegged as being superior to the rest of the Earth's life-forms – see Chapter 3 – leaving room at the top of the hierarchy for an 'alleged' God and angels). With such features of ACID in mind, the following remark from Hoyer (2012:57) is entirely appropriate: he says that Naess "considers deep ecology to be a movement encouraging people to thoroughly question the fundamental presumptions underlying the dominant economic approach of Western society in terms of value priorities, philosophy and religion" – this has obvious relevance considering the analyses conducted in Chapters 1-4 and the general focus on alternatives in this chapter.

Naess (2008:111) summarises the eight defining points of the deep ecology perspective as follows; it is instantly clear that these eight points are explicitly Orphic in character:

1. The flourishing of human and nonhuman life on earth has inherent value. The value of nonhuman life-forms is independent of the usefulness of the nonhuman world for human purposes.
2. Richness and diversity of life-forms are also values in themselves and contribute to the flourishing of human and nonhuman life on earth.
3. Humans have no right to reduce this richness and diversity except to satisfy *vital* needs.
4. The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of nonhuman life requires such a decrease.
5. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.
6. In view of the foregoing points, policies must be changed. The changes in policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present and make possible a more joyful experience of the connectedness of all things.
7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.
8. Those who subscribe to the foregoing points will have an obligation directly or indirectly to participate in the attempt to implement the necessary changes.

Inherent value is the focus of points 1 and 2. In deep ecology, *all life* has inherent value. Naess (2008:112) qualifies what is meant by 'life': the "term life is used here in a comprehensive, nontechnical way to refer also to what biologists classify as nonliving: rivers (watersheds), landscapes, cultures, ecosystems, the living earth". It is helpful for part of my argument in Chapter 3 – specifically that part focusing on the ecological problems with Scientific atomism – that Naess (*ibid*) points out the following in light of his previous qualification about 'life': only "in our Western schools is the term *living* firmly associated with the science of biology". Clearly, it is not possible in the deep ecology movement to view 'life' in its broader sense as a 'standing reserve' (Heidegger) of resources, nor for a human being to consider him- or herself to have dominion over the rest of the living and non-living world, assumptions that the Promethean shapers of discourse do level at the non-living world, as I explain in Chapter 3.

In point 2, richness and diversity of life forms is prioritised as intrinsically/inherently valuable. Having drawn attention to the place in deep ecology of inherently valuing nature, I will add the simple observation that an earnest encouragement to value the richness and diversity of life forms is technically incompatible with the *modus operandi* of ACID. As shown in Chapter 3, various Promethean traits of dominant shapers of discourse have paved the 'attitudinal foundation' upon which the industries of ACID (Chapter 2) have been built, and these industries have demonstrably negative ecological effects (Chapter 1). One such effect – perhaps a most symbolic one – is the

homogenisation of the natural areas in which these industries operate. This effect should be apparent from the research conducted in Chapters 1 and 2. Such an effect is unacceptable in deep ecology; the focus on inherent value of all of life aligns deep ecology firmly in the Orphic arena, and the emphasis on valuing richness and diversity stands in strong contrast to the actual operations and effects of ACID, which I have referred to as the Promethean writ large.

In point 3, attention is drawn to the issue of human beings' vital needs. In Chapter 6, I describe a rustic 'permaculture lifestyle' where vital needs are met in a sustainable manner – it will be seen that this rustic permaculture lifestyle is notably and necessarily different from the lifestyles associated with ACID. Accordingly, permaculture will be shown to be powerfully aligned with the general character of the Orphic, and strong linkages with permaculture practice and the tenets of the deep ecology movement will be apparent in the following chapter.

Considering the content of sub-section 1.9. of this study – a sub-section entitled 'Overpopulation' – Naess' focus on the necessary decrease of the human population (in his point 4) is understandable. I think it is important to point out what I have already pointed out elsewhere in this study, specifically regarding the role of the Promethean shapers of discourse in driving population growth: commercial oil provided the means by which human beings multiplied their population seven-fold in an evolutionary-historical blink of an eye, but it did not provide the motive. The motive can be traced to specific human attitudes, to the kinds of thoughts that human beings entertain about the relationship between themselves and the rest of the world, because what "people do about their ecology depends on what they think about themselves in relation to the things around them" (White 1971:11). In other words, the unsustainable number of human beings alive on earth is not an 'accident' – instead, it is a consequence of attitudes that human beings have fostered under the agenda of Christianity (i.e. 'have dominion over all the earth'), Science (i.e. 'control nature for the improvement of the human plight'), Technology (i.e. 'transform the standing reserve of natural resources into useful goods'), and Capitalism (i.e. 'grow or die'). It has already been seen that the "fundamental presumptions underlying the dominant economic approach of Western society" (2012:57) have been problematised in deep ecology, and I have just listed some of these presumptions (by way of parenthesis). It follows that the sustainable subsistence lifestyles of early peoples, as well as their worldviews, both of which I comment on in sub-section 5.2, are areas of interest to deep ecologists – indeed, both sustainable subsistence, and worldviews focusing on interconnectedness, are valorised in deep ecology (point 6 contains the words "the connectedness of all things").

Extensive background for points 5 and 6 has been provided in this study already. Chapters 1 and 2 show unambiguously, and in considerable detail, that the present "human interference with the nonhuman world is excessive, and the situation is rapidly worsening". In Chapter 5, I have already painted detailed pictures of 'alternatives', "states of affairs" that "will be deeply different from the present and make possible a more joyful experience of the connectedness of all things". The "connectedness of all things" (mentioned in point 6) is a very large focus of the sub-section on Morphic Resonance, and interconnectedness features in the sub-section on Older Cultures as well. It is certainly the case that in the respective sub-sections about Blessed Unrest, the Zeitgeist Movement, the Occupy Movement, and Sacred Economics, deeply different states of affairs are depicted. Certainly in the cases of the Blessed Unrest, the Occupy Movement, Sacred Economics, and Older Cultures, close communal exchange between smaller groups of people is valorised, which

stands in strong contrast to the one-size-fits-all juggernaut that is the debt-based monetary system that partly characterises ACID, a system criticised by deep ecologists for reasons I have made clear in this study.

Point 7 begins with a reiteration of the imperative to foster a form of perception in which inherent value of things is foregrounded – the theme of inherent value has been discussed already in this sub-section, as well as earlier on in the study, and I will focus on the theme extensively in Chapter 7. Naess opposes “dwelling in situations of inherent value” to “adhering to an increasingly higher standard of living”; the latter phrase invokes one of the ideals of ‘applied Science’ and ‘applied Technology’, which is to say the *dominant and dominating* forms of Science and Technology focused on in Chapter 3. This is another instance of Orphic-Promethean dichotomy, furthered by the final sentence of point 8 where a distinction is made between “big and great”. ACID – ‘advanced’ consumer competitive Capitalist industrial democratic dominion – is clearly *big*, but from the perspective of a deep ecologist, it is *not great*, for reasons that at this stage of the study are clear; Naess (2008:113) concurs: economic “growth as conceived and implemented today by the industrial states is incompatible with points 1 through 6”.

Point 8 raises the theme of action, of activism, or of acting. Naess (2008:113) elaborates on the idea of action/activism/acting, while at the same time offering some more characteristics of deep ecology: whereas “*self-determination; decentralisation; local community; and think globally, act locally*, will remain key terms in the ecology of human societies, the implementation of deep changes nevertheless requires increasingly global action in the sense of action across every border”. Such focus on activism, as seen already in this chapter, is shared by the ‘organisations’ constituting the unnamed movement traced in Blessed Unrest, as well as by the Zeitgeist Movement and the Occupy Movement.

I need to make one comment before concluding this sub-section. It is a comment with relevance not only to deep ecology, but to various focal areas of Chapter 5 where transition is prioritised, a transition from ACID to something more ‘in tune’ with the ‘workings’ of nature. I have explored several intriguing and inspiring ‘alternatives’ to Promethean attitudes and systems, but I have not encountered any convincing accounts of how transition from the dominance of the Promethean to the proliferation of the Orphic would occur. This is not a criticism of deep ecology, nor any of the focal areas of Chapter 5, because all the ‘alternatives’ are mainly Orphic in character and therefore do not dominate, while the dominant ‘players’ of ACID do dominate and (directly or indirectly) prevent alternatives from growing into substantial forces of influence in society – I discuss this in slightly more detail in the Conclusion to this chapter, and more extensively in the Introduction and Conclusion to the study. It is due to this issue regarding implementation that I will turn to permaculture in the following chapter, because, while it can be said that the focal areas of Chapter 5 have deficits in the domain of implementation, permaculture excels in this domain.

Finally in this sub-section, I will list the 25 lifestyle trends within the deep ecology movement identified by Naess (2008:140-141). These points elaborate on what living according to a deep ecology ethos entails, and add further details that clearly depict the ‘lifestyle’ as Orphic:

1. Use simple means; avoid unnecessary, complicated instruments and other sorts of means.

2. Choose activities most directly serving values in themselves and having intrinsic value. Avoid activities that are merely auxiliary, have no intrinsic value, or are many states away from fundamental goals.
3. Practice anticonsumerism. This negative attitude follows from trends 1 and 2.
4. Try to maintain and increase the sensitivity and appreciation of goods in sufficient supply for all to enjoy.
5. Eliminate or lessen neophilia – the love of what is new merely because it is new.
6. Try to dwell in situations of intrinsic value and to act rather than being busy.
7. Appreciate ethnic and cultural differences among people; do not view the differences as threats.
8. Maintain concern about the situation in developing nations, and attempt to avoid a standard of living too much higher than that of the needy (maintain a global solidarity of lifestyle).
9. Appreciate lifestyles that can be maintained universally – lifestyles that are not blatantly impossible to sustain without injustice toward fellow humans or other species.
10. Seek depth and richness of experience rather than intensity.
11. Appreciate and choose, when possible, meaningful work rather than just making a living.
12. Lead a complex, not complicated, life, trying to realize as many aspects of positive experiences as possible within each time interval.
13. Cultivate life in community (Gemeinschaft) rather than in society (Gesellschaft).
14. Appreciate, or participate in, primary production – small-scale agriculture, forestry, fishing.
15. Try to satisfy vital needs rather than desires.
16. Attempt to live in nature rather than just visiting beautiful places; avoid tourism (but occasionally make use of tourist facilities).
17. When in vulnerable nature, live ‘light and traceless’.
18. Appreciate all life-forms rather than those considered beautiful, remarkable, or narrowly useful.
19. Never use life-forms merely as means. Remain conscious of their intrinsic value and dignity, even when using them as resources.
20. When there is a conflict between the interests of dogs and cats (and other pet animals) and wild species, try to protect the wild creatures.
21. Try to protect local ecosystems, not only individual life-forms, and think of one’s own community as part of the ecosystems.
22. Besides deploring the excessive interference in nature as unnecessary, unreasonable, and disrespectful, condemn it as insolent, atrocious, outrageous, and criminal – without condemning the people responsible for the interference.
23. Try to act resolute and without cowardice in conflicts, but remain nonviolent in words and deeds.
24. Take part in or support nonviolent direct action when other ways of action fail.
25. Practice vegetarianism.

5.10 Conclusion to Chapter 5

All of the focal areas of Chapter 5, despite obvious differences, have focal points that are relevant when considering the Orphic paradigm; this characteristic of being different but at the same time being ‘united’ via their resonance with the Orphic paradigm⁴⁰² is indeed evident when considering the eight main sub-sections of this chapter. It seems completely reasonable to suggest that proponents of such ideas, approaches, theories, etc. could meet to discuss a route forward regarding the ecological crisis (and the broader crisis in which humanity is in due to the historical dominance of the Promethean – see Chapters 1 to 4) without one ‘group’ rising up to dominate the other, which is

⁴⁰² In the same way that it can be said that the areas focused on in Chapter 3 – Christianity, Science, Technology, and Capitalism – are ‘united’ by their common Promethean characteristics. This is not to say that they are coterminous or congruent in the sense of being ‘in agreement’, as has clearly become the case considering the divergence of Christian beliefs and scientific conclusions about the nature of reality. However, Christians still use Science, mainly in the form of Promethean technology, and Christianity and Capitalism go hand-in-hand (American business-politics often operates under the banner of Christianity – see <http://www.newrepublic.com/article/121564/gods-and-profits-how-capitalism-and-christianity-aligned-america> accessed 13 August 2015); this is what is meant by ‘united’.

what the Promethean ideologies discussed in Chapter 3 have historically done⁴⁰³. Baer (2012:304), by way of Harvey, hints at the need for such a ‘horizontal’ and experimental meeting to occur:

Harvey asserts that an alternative to global capitalism is imperative, thus making the movement of a ‘global co-revolutionary movement’ ‘critical not only to stemming the tide of self-destructive capitalist behaviours (which in itself would be a significant achievement) but also to our reorganising ourselves and beginning to build new collective organisational forms, knowledge banks and mental conceptions, new technologies and systems of production and consumption, all the while experimenting with new institutional arrangements, new forms of social and natural relations, and with the redesign of an increasingly urbanised daily life.’⁴⁰⁴

The need for such ‘horizontal’, paradigm-shifting discussion and experimentation to occur can further be seen again in the following ‘Warning to Humanity’, which was issued by some “1,700 of the world’s leading scientists, including the majority of Nobel laureates in the sciences, ... in November 1992”⁴⁰⁵:

A great change in our stewardship of the earth and the life on it is required if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.... A new ethic is required – a new attitude towards discharging our responsibility for caring for ourselves and for the earth. We must recognize the earth’s limited capacity to provide for us. We must recognize its fragility... The scientists issuing this warning hope that our message will reach and affect people everywhere. We need the help of many.⁴⁰⁶

Furthermore, the fact that the ‘alternative’ paradigms are so numerous⁴⁰⁷ should be taken as evidence for the claim that a plurality of ecologically-sensitive paradigms is alive and well. The Promethean position that ‘There Is No Alternative’, an explicit ideological stance of Margaret Thatcher in the 1980s during a period of fierce deregulation that accelerated the dominance of ‘free-market’ Capitalism, and by David Cameron in 2013⁴⁰⁸, is clearly incorrect – there *are* alternatives, as shown in this chapter, but they are so radically different paradigmatically, and incompatible with, the *dominate-and-grow* imperative of Promethean paradigms, that proponents of ACID *ignore* the alternatives⁴⁰⁹ – ignorance that happens to be very good for proverbial Capitalist ‘Business as usual’⁴¹⁰, the same Business areas that are focused on in Chapter 2.

The ‘plurality of alternative paradigms’ referred to in this conclusion is clearly incompatible with the broad Promethean paradigm as it has historically unfolded and dominated, but the alternatives are not poised to ambush and violently overthrow the Promethean paradigm – such typically revolutionary action, apart from being ineffective historically⁴¹¹, is ostensibly not compatible with

403 See Chapter 3 for details.

404 This quote will appear again in the Permaculture chapter due to its importance.

405 http://www.ucsusa.org/about/1992-world-scientists.html#_Vcw_4B9uTVM accessed 12 August 2015

406 The quoted passage is constituted of snippets from the entire text, available at <http://www.webcitation.org/61DcmWeQM> accessed 2 March 2017

407 Eight were explored within the space constraints of this Chapter, and several more would have been included if space were available; and this is just from the limited research by one Ph.D. student.

408 This phrase was used by Margaret Thatcher in the 1980s, but David Cameron officially revived it when, in March 2013, he said that “If there was another way I would take it. But there is no alternative”. <http://www.bbc.com/news/uk-politics-21703018> accessed 13 August 2015

409 Consider the widespread police brutality during the Occupy Movement, evidence for which is endless on the internet. Saying that ‘alternatives’ are ignored by mainstream Promethean powers is therefore a ‘safe’, conservative claim. Examples of police brutality indicate instead an active suppression of alternatives. See Chapter 4 for examples of how Promethean paradigms are perpetuated at the exclusion of alternatives.

410 Cameron stated that there is no alternative to ‘free market’ Capitalism in March 2013; between 2012 and 2014, the economy of the United Kingdom (as a relevant example) has grown considerably – see <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/countries/GB?display=graph> accessed 13 August 2015

411 Numerous violent revolutions have occurred during the reign of ACID, none of which significantly thwarted the dominance of it.

the Orphic paradigm⁴¹², which instead nurtures and cooperates. The question must therefore be raised, ‘how does a transition from the Promethean to the Orphic occur?’, especially in view of the perpetuation mechanisms of ACID discussed in Chapter 4. The answer to this question is beyond the scope of this study – if indeed any such answer exists. But in Chapter 6, Permaculture is explored as an embodiment of various aspects of the Orphic paradigm, where very simple (but effective), ecologically-beneficial physical and practical systems can be implemented by individuals, groups of people, and populations of people in towns or cities, via Orphic principles and techniques that the dominance of the Promethean cannot suppress. In other words, permaculture excels in the ‘domain of implementation’ in the context of the ecological crisis, while the Orphic arenas explored in this chapter can be said to have deficits in this domain. A network of permaculture sites and ‘hubs’ would then provide physical (Orphic) spaces that gradually could play an important role in the decentralisation of Promethean power and channel its destructive consequences instead into ecologically-sensitive ways of being and thinking, allowing for the kinds of alternative paradigms that were explored in this chapter to strengthen and spread; more about this in Chapter 6.

412 This is clearly up for debate: it might be possible to argue that a violent overthrow of ‘the competitive’ Promethean dominators is necessary in order to usher in a cooperative Orphic age, even if this involves paradoxically being competitive!

Chapter 6:

What role can permaculture play?

6.1 Important disclaimer

This chapter is the sixth of the study. Five chapters precede it. In this chapter frequent references are made to content that appears in the preceding chapters. If this chapter is approached as a 'stand-alone' chapter, i.e. approached with a lack of knowledge about what precedes it, then there will be statements made or points raised that seem to lack appropriate supporting academic elaboration, explanation, and/or argument. Consultation of the content of previous chapters will prevent such ostensibly unclarified issues. This is most obviously the case with the final paragraphs of the subsections constituting the discussion of the twelve permaculture principles: there, short references are made to relevant content from Chapter 5 – it might seem that more explanation is needed to justify the 'connections' between content, but this would be completely redundant due to the provision of elaborate details in Chapter 5. So it is very important for this chapter not to be approached in isolation from the rest of this study.

It is likely the case, quite understandably, that this chapter may be read by people with interest in permaculture, people seeking to ascertain whether or not I have 'done justice' to their understanding of, and experience with, permaculture. Permaculture enthusiasts are likely to turn straight to this chapter and therefore might suffer more than others from confusion or indignation when they encounter themes, ideas, issues, and points that have been explored in previous chapters. It must be remembered that in this study each chapter acts as an added foundational layer upon which each following chapter is built. Therefore, though it is certainly possible to read this chapter without knowledge of what precedes it, it is highly recommended that previous chapters are carefully consulted.

6.2 Introduction

At this point of the study, a clear (albeit broad) dichotomy has become apparent, a dichotomy that can be referred to when articulating various aspects of the ecological crisis focused on in Chapter 1. On one side of the spectrum are aspects of general Promethean worldviews (Chapter 3), Promethean systems (Chapter 2), change-prevention 'mechanisms' (Chapter 4), and their pernicious ecological consequences (Chapter 1). The relationship between these Promethean components is admittedly complicated, and this study has so far aimed mostly to bring together information, themes, issues, concerns, and points of critical analysis, that have arisen while research was conducted into the ecological crisis (Chapter 1), its direct physical causes (Chapter 2), the attitudes and ideologies that underlie ecocidal human actions (Chapter 3), and some of the factors that prevent changes in human society away from the Promethean status quo (Chapter 4). On the other side of the spectrum are various arenas of Orphic potential (Chapter 5), arenas in which 'alternative'

and ecologically-sensitive attitudes can be cultivated, thereby working to undermine the Promethean stronghold that has dominated human society for centuries⁴¹³.

Having drawn attention in previous chapters to the dichotomy between dominant Promethean worldviews and peripheral Orphic ideas, it is important to draw attention to what has not so far been encountered in this study: information pertaining to any kind of viable transition from Promethean dominance, domination, and widespread ecological destruction, to a societal dispensation where Orphic ideas have something of a platform where human actions can be influenced towards ecological sensitivity and harmony. Pointing out this lack of a clear path to transition is not to suggest any shortcomings of the Orphic ideas explored in Chapter 5, because as was glimpsed in Chapter 3, the Promethean paradigms that have dominated historically are perpetuated via specific ‘mechanisms’ *that prevent social change* away from the Promethean. It therefore follows that ‘alternative’ ideas, such as the Orphic ones encountered in Chapter 5, have little fertile ground in which to root – because such ground is already occupied by dominant Promethean ideas perpetuated almost exclusively by ACID – ‘advanced’, competitive, consumer Capitalist, industrial, Democratic, dominion.

The lack of a transition map, so to speak, of how to move from the ubiquitous clutches of the Promethean towards a dispensation where the Orphic is of more practical influence⁴¹⁴, is where permaculture becomes highly relevant. It will be seen throughout the rest of this chapter that permaculture is constituted largely by Orphic ideas, ethics, principles, and imperatives, and it is important to point out that these are all *easily ‘translatable’ into actions that could be performed by any person, group of people, or community, be it in their own home, village, town, city, or country*. Indeed, Bill Mollison, the founder of Permaculture as a holistic system of design, says he believes that the practicalities of permaculture “can be achieved by anyone” (1988:1) – some paradigmatic qualities (called principles below) and physical practices of permaculture supporting Mollison’s claim are explored below. It is this remarkable accessibility of permaculture that makes it so appealing, especially in the context of such a bewilderingly complicated global ecological, economic, social, Technological and political Promethean context. It is partly due to this accessibility, this attractive practical viability of permaculture, that has led to an entire chapter of this study dedicated to it; but also because, as will be seen below in this chapter, permaculture theory and practice are directly relevant in light of various themes, issues, ideas, and areas of analysis already encountered throughout Chapters 1 to 5. What will be encountered in this chapter continues the Orphic ‘response’ to the Promethean as it appeared in Chapters 1 to 4, a response that began with the Orphic ideas explored in Chapter 5. It will also be seen quite clearly that permaculture is one of the most effective and sustainable applications of deep ecology specifically, considering the outline of deep ecology that was offered in Chapter 5.

6.3 The urgency to transition

Before permaculture theory and practice are explored as Orphic alternatives in light of the Promethean context discussed and analysed in Chapters 1 to 4, it will be beneficial to acknowledge

413 See Chapter 3 for information pertaining to the centuries-long Promethean stronghold.

414 ...especially when the former is actively marginalised and negated by anything alternative to it – see Chapters 3 and 4 for examples of how this happens.

further the urgency and need to transition away from ACID – the Promethean writ large – toward a more Orphic dispensation, where a cooperative (versus competitive) approach is taken by human beings towards nature. Indeed, in the spirit of the Orphic, it is a transition journey that human beings must take *communing with nature* as indicated in these sentiments from the unorthodox thinker Terence McKenna: “We must give reverence and credence to nature and nature’s methods because no other methods will allow us to work our way out of the present mess we are in”⁴¹⁵ – and I have certainly provided details in the previous chapters of this study to justify McKenna’s remark.

The observations below, all of which identify an urgent need for transition, come from several thinkers, most of whom have already featured in previous parts of this study. The first observations are offered by Kovel (2006:122):

It is widely recognized...that habits of consumption in the industrial societies will have to be drastically altered if a sustainable world is to be achieved. This means, however, that the very pattern of human needs will have to be changed, which means in turn that the basic way we inhabit nature will have to be changed.

Considering what was explored in Chapter 1 – namely the horrendous state of global ecology, alongside that which was seen in Chapter 2, specifically human industries and ACID’s economy surrounding them – it is clear why Kovel points first to the habits of people in industrial societies as those that will need to be changed if a sustainable world is to be achieved. As will be seen in this chapter, permaculture offers a thoroughly viable, ‘down-to earth’ methodology for changing “human needs” and “the basic way we inhabit nature”, to repeat some of Kovel’s observations. Kovel (2002:xiii) early on in his *Enemy of Nature* also says that it is an illusion to think that “the overcoming of empire, which requires the undoing of what generates imperialism over nature and humanity”,

can be achieved without a profound restructuring of our industrial system, and, by implication, our whole way of being. The grip of imperialism, whether of oil or otherwise, cannot be broken within the terms of the current order. ... A world must be built that does not *need* the fossil-fuel economy, a world... without capital.

It is interesting and telling that this point, highlighted by Kovel, is so often unconsidered: stated simply and in possibly more of an accessible idiom that is widely attributed to Albert Einstein, “you can never solve a problem on the level on which it was created”⁴¹⁶. As it will be seen below, permaculture actively works to ‘profoundly restructure the industrial system’, to use fossil-fuels in the establishment phases of systems that gradually rely less and less on fossil-fuels – i.e., to change “our whole way of being”. The exploration of various aspects of permaculture to follow will have relevance in light of the points here raised by Kovel.

In a similar vein to that just seen in Kovel’s observations, Harvey, as quoted by Baer (2012:304), speaks of a “global co-revolutionary movement”

critical not only to stemming the tide of self-destructive capitalist behaviours (which in itself would be a significant achievement) but also to our reorganising ourselves and beginning to build new collective organisational forms, knowledge banks and mental conceptions, new technologies and systems of production and consumption, all the while experimenting with new

415 <http://www.perspectiveproject.co.za/index.php/home/> accessed 17 April 2017

416 <http://albert-einstein-quotes.org.za/> accessed 19 March 2016

institutional arrangements, new forms of social and natural relations, and with the redesign of an increasingly urbanised daily life.

Harvey's sentiments about "self-destructive capitalist behaviours" are certainly understandable considering some inherent features of Capitalism explored in sub-section 3.4, and indeed what was seen at several points during the first four chapters of this study. As will be seen below when exploring its principles and practices, permaculture facilitates (via refreshingly practical means) in many of the 'categories' listed by Harvey: stemming the "tide of self-destructive capitalist behaviours", the 'reorganisation of ourselves', building new "mental conceptions, new technologies and systems of production and consumption", facilitating the "new forms of social and natural relations, and with the redesign of an increasingly urbanised daily life" – what follows below about permaculture will have clear relevance in light of these points.

Then Baer (2012:304), quoting Hardt and Negri, points out that ultimately

the climate justice movement needs to join forces with other progressive or antisystemic movements that work together to create a postdemocratic global governance and that move beyond conventional representative governance structures in that they exhibit "flexibility and fluidity constantly to adapt to changing circumstances".

It should become clear from what follows below that permaculture can assist extensively in the achievement of adapting to "changing circumstances" via 'flexible and fluid' methods. Permaculture can therefore certainly be called "progressive" in the very broad political context (i.e. the postdemocratic context⁴¹⁷) alluded to by Baer.

Finally, Vetlesen's following observation (2012:42) is of remarkable relevance considering the 'urgency to change' so far focused on here alongside permaculture as a possible means by which to begin to respond to various issues encountered in this study so far:

Politicians urge the scientists to provide a technological fix in the face of the man-made destruction of species and habitats, especially in the form of anthropogenic climate change. But since these problems spring largely from frivolous consumption, would it not be more reasonable to prevent them from arising in the first place than to 'fix' them technologically?

Vetlesen's focus on ecological "destruction", "technology", "politicians" (the implication being politics, which contemporaneously denotes oxymoronic 'Democratic Capitalism'), and "frivolous consumption" corresponds directly to several previous focal areas of this study. As will be seen in what follows in this chapter, the application of permaculture principles mitigates "frivolous consumption" and thereby prevents "destruction of species and habitats" – indeed, permaculture actively works to rehabilitate habitats.

6.4 Sources of information

Three main sources of permaculture information are used in this chapter:

⁴¹⁷ See section 4.3 for the problems (indeed paradoxes) associated with Democracy in a 'free-market' neoliberal Capitalist context. 'Postdemocratic' therefore needs to be understood in the context where neoliberal capitalism has 'hijacked' democracy (again, see section 4.3.)

Bill Mollison's *Permaculture: A Designer's Manual* (1988) is the most official and extensive text in the permaculture world; informally, one could refer to the text as the permaculture bible. It is a veritable tome of 574 'A4' size pages, the vast majority of which contain two columns of small text, the rest consisting of diagrams and relevant images. Mollison (1979:1) provides a brief indication of what the book 'is about' when on the first page of the introduction he writes that although "this book is about design, it is also about values and ethics, and above all about a sense of personal responsibility for earth care". Note already that the first sentence is explicitly aligned with an Orphic agenda due to the explicit focus on Earth care.

The second source is the Permaculture Association – permaculture.org.uk – where condensed information about permaculture is offered. It is a national charity in the United Kingdom "that supports members and the public with advice, support, information and training about the theory and practice of permaculture".⁴¹⁸ This site is one of several excellent sources of information about permaculture theory and practice; it has been chosen over the other sources because I deemed it to be structured in a manner that makes navigation of the site very convenient, and also because of the succinctness of information available there.

Finally, additional information will be provided in the form of examples of *application* of permaculture theory as seen to be appropriate by me, the researcher of this study, who obtained a Permaculture Design Certificate (PDC) in 2012 in the United Kingdom alongside his 'life-partner' and who returned to South Africa to try and put what we had seen and learned about permaculture into practice in our own lives. As I point out again later in this chapter, the intermittent references to personal experience of the implementation of permaculture principles – sometimes successfully, sometimes erroneously, but always with concomitant 'learning' – is based on the methodological assumption, that knowledge, or theory, cannot be divorced from practice.

6.5 Permaculture: definition, ethics, and initial comments

The word 'permaculture' is a neologism coined by Mollison (1979:ix), formed by parts of the words *permanent* and *agriculture*⁴¹⁹. The Permaculture Association (permaculture.org.uk) reiterates the focus on permanent agriculture, but adds that permaculture is also 'about' "permanent culture"⁴²⁰ as well. The association explains further (Ibid) that permaculture

is about living lightly on the planet, and making sure that we can sustain human activities for many generations to come, in harmony with nature.

The Association immediately adds a comment (Ibid) to allay any scepticism about the use of the word 'permanent', seeing as one might rightly be suspicious of any claim to permanence in a world that is obviously is a state of constant flux⁴²¹:

418 <https://www.permaculture.org.uk/about> accessed 18 January 2016

419 Note that Mollison was not the first person to use the phrase 'permanent agriculture'; it was certainly already mentioned in a book called *Tree Crops*. See the Wikipedia entry for Bill Mollison.

420 <https://www.permaculture.org.uk/knowledge-base/basics> accessed 18 January 2016

421 See the extensive comments made by Mollison on this issue in the focus on principle 3, 'obtain a yield', below.

Permanence is not about everything staying the same. It's about stability, about deepening soils and cleaner water, thriving communities in self-reliant regions, biodiverse agriculture and social justice, peace and abundance.

Furthermore, Mollison (1979:ix) states that permaculture is “the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems” (Ibid). This focus on design is reiterated by the Permaculture Association⁴²²: it refers to permaculture as “an ecological design process”⁴²³ and immediately observes that permaculturalists “are learning from nature. Design methods are used in conjunction with permaculture principles to create an overall pattern or plan of action” (Ibid).

Mollison continues: permaculture “seeks first to stabilise and care for land, then to serve household regional and local needs, and only thereafter to produce surplus for sale or exchange” (Ibid). Permaculture is the “the harmonious integration of landscape and people providing their food, energy, shelter, and other material and non-material needs in a sustainable way” (Ibid). It is based on what Mollison (Mollison 1979:ix) calls the “philosophy behind permaculture”:

The philosophy behind permaculture is one of working with, rather than against, nature; of protracted and thoughtful observation rather than protracted and thoughtless action; of looking at systems in all their functions, rather than asking only one yield of them; and of allowing systems to demonstrate their own evolutions.

Before comment is made and analysis conducted in light of the above defining points, it is important to highlight what both Mollison and the Permaculture Association refer to as permaculture ethics. What follows immediately below is from the Association⁴²⁴, which reiterates Mollison's work (1988:2). Note that the third ethic ('fair shares') is articulated as it is below by both The Association and Mollison; but in wider permaculture literature it widely known as 'fair shares' or 'fair share'⁴²⁵:

Neatly summed up as "Earth care, people care, fair shares", the permaculture ethics give purpose to our work, and connect us with the many millions of others who are also working towards a fairer, healthier and more harmonious human culture.[⁴²⁶]

1. CARE OF THE EARTH: Provision for all life systems to continue and multiply. ...
2. CARE OF PEOPLE: Provision for people to access those resources necessary to their existence. ...
3. SETTING LIMITS TO POPULATION AND CONSUMPTION [a.k.a. 'fair share']: The third ethic recognises that: a. The Earth's resources are limited. b. These resources need to be shared amongst many beings. ...

It is immediately obvious from consideration of these initial definitions that something entirely different from ACID ('advanced' competitive consumer Capitalist industrial Democratic dominion – see Chapter 3) is denoted. As it was seen in Chapter 3, the overarching qualities of ACID are rigidly Promethean – dominance and dominion over nature are firmly entrenched as the status quo, nature

422 <https://www.permaculture.org.uk/knowledge-base/basics> accessed 18 January 2016

423 <https://www.permaculture.org.uk/knowledge-base/design> accessed 18 January 2016

424 <https://www.permaculture.org.uk/knowledge-base/ethics> accessed 18 January 2016

425 At the Permaculture Association website, the term 'fair shares' is listed initially (as quoted) at the top of the page, and then the longer term 'setting limits to population and consumption' appears in elaboration of the ethic.

426 Immediately here there is a sense of permaculture resonating with the 'unnamed movement' of Blessed Unrest, as well the Occupy Movement, where the overall goal is the same; see Chapter 5.

is reduced to a standing reserve of resources for humans to exploit, nature is increasingly 'mastered' and 'possessed' by human beings, and the assumption that endless growth is possible inherently underlies human economic activity as it has historically 'developed' by way of preceding Promethean paradigms (see Chapter 3 for more characteristics of the Promethean) – evidently, these points indicate an inherent Promethean trait of 'working against, rather than with, nature'. Some of the definitions from the Permaculture Association above explicitly state directly opposite 'qualities' – light living on the planet, sustainable human activities, harmonious interaction with nature, "deepening soils and cleaner water", creating "thriving communities in self-reliant regions", working towards "biodiverse agriculture and social justice, peace and abundance". This has all been summed up succinctly by Mollison (1988:35) as working with, rather than against, nature: "Work with nature, rather than against the natural elements, forces, pressures, processes, agencies, and evolutions, so that we assist rather than impede natural developments". This central permaculture imperative resonates perfectly with the character of the Orphic as it has so far emerged in this study, and to some degree also with the 'more environmentally-aware approach' suggested by Braungart and McDonough in their *Cradle to Cradle* (2002). Their study confirms that for more than 2000 years, humanity has worked with a 'cradle to grave' model (2002:27-28), and that humanity should switch to a 'cradle to cradle' model (2002:99), a model compatible with the general permaculture approach I explore in this chapter. Here is an extract from *Cradle to Cradle* (2002:103-104) in which *design* is emphasised (as it is in permaculture⁴²⁷); the reference to the notion of waste not existing is important considering that permaculture principle number six (which I will discuss below) is 'produce no waste':

If humans are truly going to prosper, we will have to learn to imitate nature's highly effective cradle-to-cradle system of nutrient flow and metabolism, in which the very concept of waste does not exist. To eliminate the concept of waste means to design things – products, packaging, and systems – from the very beginning on the understanding that waste does not exist. It means that the valuable nutrients contained in the materials shape and determine the design: form follows evolution, not just function.

To continue in the vein of working with, rather than against, nature: Mollison, in one of the aforementioned definitions, explicitly states that the first priority of permaculture is to "*stabilise and care for the land*" – this imperative, along with the Permaculture Association's focus on "light living" in "harmony with nature" – are powerfully ecocentric qualities, conspicuously absent in the analysis of ACID (see Chapters 1 to 4). Indeed, the dominant Promethean characteristics of ACID have already in this study been inculcated as prime causal factors behind the current ecological crisis. The broad context of the ecological crisis (see Chapter 1) that in this study has been directly linked with the spread of the practices, industries and economy of ACID (explored in Chapter 2) is surely partly why Mollison, in the first quoted defining sentence, defines permaculture as "the conscious design and maintenance of agriculturally productive ecosystems *which have the diversity, stability, and resilience of natural ecosystems*" (emphasis now added). Human beings have actively been destroying natural systems for centuries (see chapters 1 and 2), replacing them almost exclusively with Promethean systems, symbols for which are agricultural monocrops, oil fields, concrete-dominated cities, genetically modified food-yielding plants, etc., hastening the precarious ecological plight of the planet. The need is therefore urgent for systems to be established that have the qualities listed by Mollison – i.e. diversity, stability, resilience. Taking as axiomatic the point that

⁴²⁷ It was also seen in Chapter 5 that design is central to the Zeitgeist Movement's vision of a sustainable human civilisation.

such ecosystems are necessary for human survival (a point that bewilderingly is overlooked or downplayed by punters of Promethean dogmas), and in the context where Promethean systems destroy ecosystemic diversity, stability and resilience, it is encouraging to see in permaculture an Orphic commitment to restore some of the extensive ecological damage human beings have caused while pursuing Promethean priorities.

Despite frequent explicit Orphic ecocentrism in permaculture (as has already been glimpsed, and as will be seen throughout this chapter), it should already be clear from the defining sentence just discussed – permaculture is “the conscious design and maintenance of *agriculturally productive ecosystems* which have the diversity, stability, and resilience of natural ecosystems” (emphasis now added) – that another priority in permaculture is to provide for the needs of human beings, because agriculture is a human domain. So permaculture is not exclusively ecocentric⁴²⁸, and increasingly in this chapter it will be seen that Permaculture does not endorse a ‘binary opposition’ between anthropocentrism and ecocentrism. In permaculture, the provision for human needs is achieved via numerous means, but to begin with, the focus is on *agriculturally productive ecosystems*. Contrast first the kinds of agriculturally productive ecosystems to which Mollison refers with the Promethean⁴²⁹ approach to agriculture (explored in Chapter 2); He comments on the latter (1979:3-6) early on in *The Designer’s Manual*⁴³⁰:

[L]arge holdings and few people create vast grazing leases, usually for a single species of animal. This is best described as ‘baronial permanence’ with near-regal properties of immense extent, working at the lowest possible level of land use (pasture or cropland is the least productive use of land we can devise). Such systems, once mechanised, destroy whole landscapes and soil complexes. They can best be typified as agricultural deserts.

Mollison’s use of the word ‘mechanised’ invokes much that was explored in Chapter 3, where mechanisation has historically been influenced by, and simultaneously perpetuated, Promethean paradigms – see Chapter 3, specifically sections 3.3 and 3.4. All of the sections constituting Chapters 1 and 2 directly implicate Promethean mechanisation⁴³¹ as instrumental in the human onslaught against the natural world, an onslaught that has resulted (partly) in the ‘agricultural deserts’ mentioned by Mollison.

Contrasting with an agricultural desert there is a forest, a powerful symbol encountered in permaculture. Mollison (1979: 6) first says that forests,

not seen by industrial man as anything but wood, are another permanent agriculture. But they need generations of care and knowledge and hence a tribal or communal reverence only found in stable communities. This then, is the communal permanence many of us seek: to be able to

428 Except, arguably, if human beings are included in the encompassing, planetary natural ecosystem, as the growing field of posthumanism claims they should; see Rosi Braidotti, 2013: *The Posthuman*; Cambridge: Polity Press.

429 Note that during the research and writing of this study, neither the name ‘Prometheus’ nor the adjective ‘Promethean’ were encountered in Mollison’s writing, and the same is the case with the term ‘Orpheus’ or ‘Orphic’. Regardless, the themes, observations, theory and practice of permaculture as delineated in *The Designer’s Manual* all clearly resonate with the relevance of the dichotomy between ‘the Promethean’ and ‘the Orphic’ as explored in this study.

430 ...though he does not use the word ‘Promethean’.

431 Note that the argument here is not that mechanisation is ‘bad’, and that a return to some sort of ‘archaic’ labour-intensive lifestyle is ‘good’. Quite to the contrary: as it was seen in Chapter 5 where the focus is on the Zeitgeist movement, mechanisation can be used for social and ecological good. The argument in this study, as is already clear from the content of previous chapters, is that mechanisation in its explicitly Promethean format – which is to say mechanisation as it has historically ‘developed’ alongside industrial, reductionist materialist science, and Capitalism – clearly fits as a central ‘tool’ used by Promethean ‘man’ in a violent onslaught against the natural world.

plant a pecan or citrus when we are old, and to know it will not be cut down by our children's children.

Note here that the word "industrial" used in the preceding quote could quite easily be 'Promethean', for Promethean 'man' (as discussed in Chapter 3) has an explicitly reductionist view of nature (i.e. reducing trees to wood), specifically of nature's 'resources'. In this instance of industrial/Promethean 'man' seeing the forest only for its wood, and not proverbially for the trees, Mollison's words invoke the image of the classical reductionist, reducing nature to a 'standing reserve' (Heidegger's words – see Chapter 3) of resources for humans to plunder at will. Mollison (Ibid) is quick to point to what are clearly dangers of the Promethean approach, and he furthermore alludes to characteristics that have been identified as Promethean in this study:

The real risk is that the needs of those people working 'on the ground', the inhabitants, are overthrown by the needs (or greeds) of commerce and centralised power; that the forest is cut for warships or newspaper and we are reduced to serfs in a barren landscape. This has been the fate of peasant Europe, Ireland, and much of the third world.

Commerce and centralised power have been under scrutiny in previous chapters of this study. 'Free-market' Capitalism is the centralised commercial (i.e. economic) system discussed in sub-section 3.5, where it was seen that Capitalism inherently must 'grow or die' – hence Marx's expression 'all that is solid melts into air'⁴³²; the unstoppable expansion of this kind of economic system⁴³³ is what accelerates the 'reduction' of natural entities like forests into standing reserves of resources; and the more resources that are processed for economic growth, the more the human population increases and consumes. It was seen in sub-section 4.3 that democracy in its idealised, theoretical form cannot exist in a Capitalist system (despite misguided, widespread belief that Capitalism is synonymous with democracy) because, as explained by Barnes (via Speth) in that section, democracy (in its idealised form) is an open system that has been infected by the closed system of Capitalism; in theory political leaders can be 'voted out' and thus the ostensibly democratic process is upheld, but once Capitalist policies (e.g. the money supply being printed by Reserve Banks – see sub-section 2.9; and the golden imperative to grow the GDP – see sub-sections 3.5 and 4.3) have been established, the phenomenon of 'inheriting the cheque book' occurs and the system remains an economic slave to (and perpetuator of) the Capitalist system. Furthermore, Mollison's reference to a 'barren landscape' is a fitting description of some of the effects of Promethean industries explored in Chapter 1 – effects such as loss of topsoil, loss of biodiversity, water issues, and landfill waste. People have to live in such a 'barren landscape' (the opposite of a 'thriving community' partly aimed for in the defining points made by the Permaculture Association), while, by contrast, via an ecologically-sensitive design approach, practitioners of permaculture work to mitigate Promethean problems and create instead systems that have the resilience and integrity of natural systems. It is in this way that people's needs are met in permaculture: by *first* establishing systems that have the resilience of natural systems, and *then* aligning productive human action with the natural functionality of the designed system. This is not an exclusively instrumental, pragmatic and operational basis for the relationship between humankind and their environment, i.e. the basis of the Promethean Technological approach to

432 "All that is solid melts into air, all that is holy is profaned, and man is at last compelled to face with sober senses his real conditions of life, and his relations with his kind." <https://www.marxists.org/archive/marx/works/1848/communist-manifesto/ch01.htm> Accessed 29 March 2016.

433 The Capitalist economic system should at this stage of this study be considered an anti-economic system considering that the definition of economy and 'economise' involves "thrifty management; frugality in the expenditure or consumption of money, materials, etc." (<http://www.dictionary.com/browse/economy> accessed 10 March 2016), which is evidently not what Capitalism does – see Chapters 1, 2 and 3.

nature. Instead, the health and well-being of nature is *first* prioritised, and then human systems are designed to simulate the functioning of natural systems.

In permaculture, this order of *first* establishing systems that have the resilience of natural systems, and *then* aligning human action with the natural functionality of the designed system, cannot be the other way around. That is, natural systems cannot ‘come second’, because, axiomatically, all creatures on the planet (human beings included) need healthy ecosystems in order to survive. Exclusively anthropocentric, Promethean worldviews have acted to mould nature to fit the ‘needs’ (and ‘greeds’, as Mollison commented above) of human beings and in so doing have resulted (partly) in the ecological crisis. In permaculture, the issues that constitute the ecological crisis are mitigated by placing people second and ecology first. An irony is that Promethean worldviews, by placing human beings ‘above’ nature in order of priority, greatly jeopardise the well-being and long-term survival of human beings (Chapters 1, 2 and 3 all work partly to evidence this point), whereas in permaculture, by placing nature ‘above’ human beings, the well-being and long-term survival of human beings is made possible.

So far in this sub-section, permaculture has been defined, and ‘earth care’ and ‘people care’ have been discussed at some length, with the emphasis being on the prioritisation of ‘earth care’ over ‘people care’ – but it is crucial to bear in mind that the favourable, possibly counter-intuitive consequence of this ordering of priorities is that the needs of human beings are optimally met via the alignment of human systems with natural systems, as discussed above. Moving now to the third and final broad principle in permaculture: ‘setting limits to population and consumption’ (1998:2, 34), more commonly known as ‘fair share’ or ‘fair shares’, consider the following: setting limits to (human) population and consumption does indeed promote an atmosphere of ‘fair share’ in the sense of, first, ensuring that human beings do not have a negative impact on other forms of life and their environments, because (to state the obvious) a considerably smaller human population that consumes less per person (i.e. takes fewer ‘resources’ from nature) will result in far less of an impact on nature compared to what was glimpsed in Chapters 1 and 2, where the human population hovered at a staggering 7.4 billion people⁴³⁴, approximately. Second, setting limits to population and consumption ensures a fair share of allocated resources between human beings themselves because (axiomatically again) fewer people consuming fewer available ‘resources’ will likely result in more resources available per person and thereby achieve a state of human affairs where one receives a ‘fair share’ of available resources, or at least a ‘fairer share’ of them.

6.6 The twelve principles

As stated at The Permaculture Association’s website⁴³⁵, these “principles are inherent in any permaculture design, in any climate, and at any scale. They have been derived from the thoughtful observation of nature, and from earlier work by ecologists, landscape designers and environmental science”. The importance of specifying permaculture principles is perhaps encapsulated in the following remarks by Mollison (1988:3) – note the *flexibility* afforded to one who may wish to apply the principles (attention is drawn to this tolerance for flexibility by way of added italics):

434 <http://www.worldometers.info/world-population/> accessed 10 March 2016

435 <https://www.permaculture.org.uk/knowledge-base/principles> accessed 18 January 2016

It has become evident that unity in people comes from a common adherence to a set of principles, *each of us perhaps going our own way, at our own pace, and within the limits of our resources*, yet all leading to the same goals, which in our own case is that of a living, complex, and sustainable earth. Those who agree on such ethics, philosophies and goals form a global nation.

6.6.1 Observe and interact

The Permaculture Association⁴³⁶ begins to elaborate on this principle as follows: “By observing natural and social patterns we are able to use them in our design work – this relates to Bill Mollison’s philosophy of ‘work with nature, not against’. We have to know how nature works if we want to be able to work with it”. This latter imperative – being “...able to work with nature” – is coterminous with the notion ‘interacting’ with nature, as the name of this principle suggests. It follows that observing and interacting is therefore part of working with nature, which is squarely in the realm of the Orphic agenda.

Furthermore, to cautiously employ a dichotomy here, one can argue that if interacting with and working with nature are Orphic qualities, then the Promethean counterparts would be a lack of such interaction with and working with natural systems, and instead a ‘one-dimensional’ mode of action (a deliberate reference to Marcuse’s one dimensionality explored in sub-section 4.4). Indeed, the industries identified in Chapter 2 do *work against nature*, with the vast destruction of nature (see Chapter 1) by the relevant industries being testament to this point. One could easily argue that Promethean ideologies and industries do partake in observation, but as explored in Chapter 3, the observation process in such a context is heavily dominated by priorities such as growth of the debt-based monetary economy (measured by ecologically-problematic indices such as GDP), the domination of (and dominion over) the natural world, the exponentially-increasing processing of natural resources via the use of Technology in consumer-Capitalism (see sub-section 2.9, as well as Chapter 3, for details) – Mollison (1988:1) uses an appropriate phrase for what has just been described: the “...madness of uncontrolled industrial growth”. These kinds of Promethean phenomena are surely actions as opposed to ‘interactions’ because, in the context of permaculture, the latter requires that natural systems thrive via the permaculture design process, while the former tends to ‘flatten’ natural environs in the characteristically Promethean trend of dominating nature. Needless to stress, in terms of ethics, such ultimately ecologically-destructive behaviour deserves the epithet of an ‘anti-ethics’ on a global scale, considering that ‘ethics’ pertains to ‘ethos’, or a collective sense of place and purpose in the world.

So in the dominant ecocidal Promethean context re-touched upon above, a person, a group of people, an organisation, or a local or regional municipality, can begin to apply permaculture principles by shifting from Promethean methods of observation (on indices such as monetary profit) and anthropocentric action, to observation of natural processes and a kind of ecocentric human interaction with nature, a working-with-nature rather than against it. This means observing and identifying ecologically-problematic actions; as Mollison (1988:3) points out, “behaviours in the natural world which we thought appropriate at one time later prove to be damaging to our own society in the long-term (e.g. the effects of biocidal pest controls on soils and water)”, and once such

436 <https://www.permaculture.org.uk/principle/1-observe-and-interact> accessed 29 January 2016

observations are made, ecologically-problematic actions are adapted or abandoned: “we are led by information, reflection, and careful investigation to moderate, abandon, or forbid certain behaviours and substances that in the long-term threaten our survival; *we act to survive*”⁴³⁷ (Ibid).

Both of the above comments by Mollison are relevant, considering the urgency to transition (as elaborated upon earlier in this chapter); both of them, along with this permaculture principle number one, imply that an important starting point in permaculture is identifying what *not to do*, and it is clear in the wide context of this study that various Promethean actions need to be abandoned if a sustainable world is to be achieved – prime candidates of Promethean action that should be discarded are found in Chapter 2.

By way of having studied and practiced permaculture, I can add the following practical points to the discussion of this principle in the light of what has so far been said about it:

Simple observation leads to the conclusion that people do not *need* most of the appliances and apparatuses that can be found in the average household, items that are almost exclusively produced in the Promethean manner and are part and parcel of the consumer model of living, items that require endless extraction of resources (to manufacture, to power, and to replace) from the ‘standing reserve’ of nature as per the Promethean worldview. Nobody *needs* a television, a toaster, an electric geyser/boiler, a fridge, a washing machine, an electric clothing dryer, a dish-washing machine, several lights in every room, a dehumidifier, a humidifier, etc. – household items that for the vast duration of human history did not exist but that are now ubiquitous and inculcated in the consumerist lifestyles that partly underlie the ecological crisis. By similar logic, big houses, and cement houses, are not *needed* nor are they ecologically viable; full reliance on mono-cropping agriculture is not necessary; neither are two hot showers (in the verb form) – or even one shower – per day; the same in the cases of flush toilets, basins and sewer systems. And people certainly do not *need* to eat at restaurants nor indulge themselves in unsustainable entertainment industries associated with ‘shopping-mall culture’ and the competitive sporting industry.

Instead, time that would have been spent watching television, eating out at restaurants, and indulging in other forms of entertainment associated with ACID, can be spent making compost from the compost toilet system that replaces the flushing toilet system, thereby rebuilding soils destroyed by Promethean action; time can be spent designing the home and/or community garden and implementing the design for home and/or community food production, thereby reducing the ‘need’ to rely exclusively on the Promethean agricultural system; can be spent reusing the grey water from basins and baths and showers in the home/community garden⁴³⁸; can be spent doing clothes- and dish-washing by hand and returning the grey water into the system via natural water-purification methods, e.g. reed bed purification. Instead of taking two showers a day, one can take one shower every two days, drastically reducing water consumption and energy-use associated with

437 Considering something that has already been pointed out – that human survival depends on the flourishing of the natural world – ‘acting to survive’ here denotes the survival of human beings as well as natural systems. This is the realm of the Orphic, versus the realm of the Promethean where ‘acting to survive’ occurs with an anthropocentric focus exclusively on actions ostensibly good for human beings regardless of negative impacts on nature. The Orphic relationship between human beings and nature, in the context of permaculture, can be seen in the following from Mollison (1988:3): “Although initially we can see how helping our family and friends assists us in our own survival, we may evolve the mature ethic that sees all humankind as family, and all life as allied associations. Thus, we expand people care to species care, for all life has common origins. All are ‘our family’”.

438 As a general rule, the use of grey water in gardens requires that biodegradable soaps and detergents are used for domestic washing purposes.

boilers/geysers; going further here, one can abandon hot showers altogether and take cold showers, one every two days (more on this below in this sub-section); one can change one's diet so that an electric fridge can be eliminated entirely. Of course, abandoning various combinations of the 'ACID lifestyle' that is the Promethean writ large is not initially easy, but it is possible – and doing so clearly drastically decreases the amount of money needed to accrue, maintain, replace, and power various appliances and apparatuses, which in turn decreases cyclical consumption, as well as the need for full-time work in the Capitalist system, which in turn makes more time available to adapt to an Orphic lifestyle. Accordingly, making such lifestyle changes dramatically decreases the transport 'necessary' in the orthodox context of ACID, many aspects of which have been indirectly alluded to in this sub-section already, e.g. trips out to the shops for food and/or entertainment, and daily trips to the workplace in a full-time work context.

I have none of the aforementioned appliances or apparatuses, and do spend much time participating in the aforementioned alternatives to the Promethean status quo. Accordingly I reap the benefit of working only part-time in the Capitalist world, while spending the other part of my time doing some of what is recommended in the paragraph prior to this one, as well as engaging in other pursuits such as researching and writing this study. My home is a 12 square meter 'cabin' made from reclaimed wood, as well as a semi-open outdoor kitchen area with woodchip floors, plus a tiny outhouse made similarly from reclaimed wood – the roofs of all structures are, however, corrugated iron, an appropriate use of metal because of the long-term durability and aptness for catching rainwater into storage tanks. My means of cooking food and heating water for hot drinks are threefold: a solar cooker, a 'rocket stove', and a gas ring cooker. Hot water for the most part of the year comes via a coil of piping on a sun-facing roof, providing 'free' hot water for a warm shower⁴³⁹ if a warm shower is so desired (taken usually every second day, this frequency having proven to be more than sufficient for cleanliness), and for the water that is used in the dish-washing and clothes washing processes. All water gets returned into the gardens because ecologically-friendly soaps are used for the listed 'water activities'. These are all interactions with nature – nature is not endangered by the human pursuits, but instead the human pursuits are made possible via the use of what can be sourced from nature (and returned to nature) sustainably.

What gradually occurs via such a process of observation is that the proponent of such Orphic actions becomes aware that everything he does impacts on the world around him – his is an interaction rather than an action. She takes heed of information about ecological degradation and begins to observe what she does and the effects thereof. He sees that the 'blind', 'default' actions prescribed in ACID are almost exclusively unsustainable, and instead begins to interact with a living world of which he is only one small part, and not (delusionally) the centre thereof.

So observation can be about 'what not to do', and what to do instead, as elaborated upon above. In terms of permaculture design, observation is of systems, processes, and phenomena in general, with the aim of adjusting the human response towards interaction with them versus mere action. For example, one might observe that organic material cut from trees and bushes left on the ground results in soils remaining moister under the organic materials than uncovered ground, and that plants and trees with such organic matter (known as mulch) at their bases need less watering. One

439 I prefer cold showers – see an example of a Google search (<http://www.menimprovement.com/benefits-of-cold-showers> accessed 31 January 2016) for an indication of the benefits of taking cold showers.

then might collect mulch material (such as grass-cuttings, leaves, newspapers, etc.) from the local area and spread these in appropriate places in a home garden⁴⁴⁰. In turn, one might then notice an increase in the amount of worms in the soil, which accordingly attracts birds to the garden, thereby strengthening biodiversity of the system. This is an excellent example of an Orphic interaction that arises from observation, because loss of biodiversity (e.g. few birds) is a serious phenomenon that partly constitutes the ecological crisis, and here it has been seen that simple observation and the adjustment of action towards interaction can help in offering a response to the phenomenon.

One might also observe that a specific plant planted next to a different plant ‘behaves’ or ‘performs’ differently in relation to having been planted next to yet a different plant. This kind of observational process has resulted in designers identifying ‘companion plants’, for example the ‘three sisters’ – corn, squash, and beans. The corn provides the tall stems up which the beans grow; the beans fix nitrogen into the soil, which is used by the ‘heavy-feeding’ squash plants. Similarly, one might observe that certain plants make very bad companions and avoid planting them close to one another, for example squash and tomatoes, both of which are ‘heavy feeders’ and will compete against one another for nutrients. This kind of observational process is one that permaculture practitioners attempt to nurture as much as possible. By interacting rather than merely acting, designers are more open to feedback from the eco-system and therefore cooperate with the system based on systemic feedback – more on this point in the sub-section ‘apply regulation and accept feedback’ below.

Finally, there are several instances where the Orphic ‘offerings’ explored in Chapter 5 resonate with that which has been explored in this sub-section about observation and interaction. Older cultures, as a first example here, *interacted* in what was seen by them to be a living world of which they are only a part. Then, the ‘unnamed movement’ of *Blessed Unrest* is constituted by millions of organisations, groups, and individuals who have observed socio-political, economic and/or ecological injustice and who participate to create a ‘horizontal platform’ where harmonious *interaction* between people and natural ecology can take place. Both Hancock and Sheldrake propose alternative ways of looking at history and science respectively based on observational processes that differ from dogmatic and orthodox institutionalised methods of observation. Sheldrake’s morphic resonance furthermore posits fields as an important means by which all people and indeed all species (and objects) interact with the other members of their species. Finally here, Eisenstein’s sacred economics clearly arises after the observation of the hefty shortcomings and destructive inbuilt tendencies of the economy of ACID, and among his suggested alternatives he describes the concept of ‘the commons’, quite clearly constituted by interacting components, including “the surface of the earth, the minerals under the earth, the water on and under the ground, the richness of the soil, the electromagnetic spectrum, the planetary genome, the biota of local and global ecosystems, the atmosphere, the centuries-long accumulation of human knowledge and technology, and the artistic, musical, and literary treasures of our ancestors”. (Eisenstein .pdf pg.132)

440 At the time of proof-reading this sub-section in the middle of 2017, wild-fires have just devastated parts of the Eastern and Western Cape, and much an acre of land (for which my partner and I are custodians) burnt, taking with it the indigenous Fynbos vegetation. Interestingly, the wood-chip ‘mulched’ areas around our newly-planted fruit orchard did not burn, though I think luck may have played a large factor when it comes to why these areas did not burn. Instead of using exposed wood and other carbon materials for mulch, my partner and I have started to use horse manure from a local stable as the top mulch layer in order to cover carbon layers and thereby decrease easy igniting of materials. Another option, albeit a slower one, is to add only compost to exposed ‘fire-risk’ areas, and in this scenario the compost is made in such a manner as to eliminate or greatly reduce fire hazards.

6.6.2 Catch and store energy

Mollison (1988:13) states that energies “enter a system, and either remain or escape. Our work as permaculture designers is to prevent energy leaving before the basic needs of the whole system are satisfied, so that growth, reproduction, and maintenance continue in our living components”. Already touched upon when discussing the first principle were the examples of processing human wastes (also known as humanure⁴⁴¹) and grey water into the home garden; of using a solar cooker to cook food and boil water, and a coil of pipe on the roof to heat water for showers and clothing- and dish-washing; of mulching soils with local organic matter to prevent water loss from the ground. There are other relevant examples in the discussion of principle one, but a general outline of what it means to catch and store energy is already clear. Using the example of catching and storing water, Mollison (1988:13) explains how the catchment and storage of energy is an important aspect of permaculture design:

The question for the designer becomes, ‘How can I best use energy before it passes from my site, or system? Our strategy is to set up an intersection net from ‘source to sink’. This net is a compound web of life and technologies, and is designed to catch and store as much energy as possible on its way to increasing entropy. Therefore, we design to catch and store as much water as possible from the hills before it ends up at its ‘sink’ in the quiet valley lake. If we made no attempt to store or use it as it passes through our system, we would suffer drought⁴⁴², have to import it from outside our system, or use energy to pump it back uphill.

According to this way of thinking, the flush-toilet system common in ACID, as well as the orthodox method of connecting basins to sewerage systems that lead to sewerage plants and often the ocean, are hopelessly inefficient as they do not allow for energy to be caught or stored. Homes in the typical Promethean context are not built facing the sun for passive warmth in winters nor are they designed to be passively cooled in summers. Furthermore, a common Promethean tendency is for gardens to consist of neatly manicured lawns and ornamental flower beds, and for all organic material to be discarded away from the home and garden. Finally, many homes are built to have no garden at all, with instead considerable outdoor areas that are paved or cemented for ‘ease’ of upkeep, resulting in water simply running into sewers when it rains because there is no soil or plants to absorb the water. Mollison (1988:12) comments on several of the points just raised: “Perverse planning is everywhere obvious: houses face not the sun, but rather the road, lawns replace gardens, and trees are planted to be pruned and tended. Make-work is the rule...”.

The principle of catching and storing energy is further elaborated on by Mollison (1988:7):

Recycling of nutrients and energy in nature is a function of many species. In our gardens, it is our own responsibility to return wastes (via compost or mulch) to the soil and plants. We actively create soil in our gardens, whereas in nature many other species carry out that function. Around our homes we can catch water for garden use, but we rely on natural forested landscapes to provide the condenser leaves and clouds to keep rivers running with clean water, to maintain the global atmosphere, and to lock up our gaseous pollutants. Thus, even anthropocentric people would be well-advised to pay close attention to, and to assist in, the conservation of existing forests and the rehabilitation of degraded lands. Our own survival demands that we preserve all existing species, and allow them a place to live.

441 ...which must be put through the appropriate composting processes.

442 As a side note here, devastating droughts are hitting South Africa at the time of writing this section, i.e. January 2016. Mollison’s statements may explain partly what has been lacking in terms of human system design.

The returning of wastes to the soils has already been commented on in this sub-section; to a lesser degree, so has the catchment of water into storage tanks, a solution that is so obviously important in the context of global fresh-water shortages that nothing about it will be added here. The importance of forests was elaborated on early in this sub-section, but Mollison has drawn further attention to forests and the need for more of them in the broader ecological context of climate change. Planting forested areas is therefore an Orphic method of responding to issues of climate change and deforestation, as implied by Mollison above. The Permaculture Association⁴⁴³ adds the following information, relevant considering both the specific focus on trees (and by association, plants), and on the general principle of catching and storing energy:

The vast majority of energy is supplied by the sun which is then captured by plants who have learnt the clever trick of how to turn photons into complex carbohydrates. This basic trick drives the whole planet's ecosystem. We need to rebuild 'natural capital' in order to create the basis for a long-term sustainable society.

This is a reminder that plants are food for human beings, and for all animals, and that food provides energy for people and other animals. When one has designed and grown a food garden and/or a forest garden, one has literally caught the energy of the sun and stored it in the form of plants. This Orphic energy system cannot be compared to the fossil-fuel energy systems that power ACID; the former increase biodiversity, preserve resources, and clarify the air, while the latter has been shown to do exactly the opposite (see Chapters 1 and 2).

The Permaculture Association refers explicitly to the approach that permaculture designers can take in order to begin catching and storing energy: 'we' help

to arrange our landscapes to maximise this energy capture. This is mainly by planting and nurturing new areas of 'biomass' - living things - mainly plants, usually as trees, woodlands, forest gardens, meadows, ponds, etc. Wherever possible we are also seeking to ensure that plant systems contribute to the development of deep healthy soils. Deep soils allow good crops, retain more rainfall, and also have the hugely important role of being the world's largest and most important living stores of carbon.

I have made several references in this chapter (see principle number one) already to the catchment and storage of energy in my own permaculture practice. Another good example in this regard is the piling up of organic matter around the homestead, specifically tree branches, tree stumps, leaves, trimmed-back garden matter, and cut grass⁴⁴⁴. This process began in my own permaculture endeavours when there was a need to keep neighbouring dogs out of the homestead; rather than spending limited time and money on making a fence, some of my peers and I managed to intercept tree-fellers en route to dumping their cut-down trees at municipal/council refuse sites, and we convinced the tree-fellers to discard of the organic matter in selected areas around what became the homestead area. These walls of organic matter gradually decompose and diminish in height, so twice annually one can add another layer of material as it gets removed from the gardens or as it is brought into the system from tree-fellers (who have happened to become acquaintances or friends). These walls of organic matter also act as long-term fertility 'sponges', seeping nutrients out around them for neighbouring trees and plants that additionally get shaded and sheltered by the 'walls'; and

443 <https://www.permaculture.org.uk/principle/2-catch-and-store-energy> accessed 31 January 2016

444 The same caveat as the one mentioned in a footnote for principle number 1 (sub-section 6.6.1) applies here: 'woodpile walls' could be a fire hazard. In fire zones, this risk needs to be minimised by covering the 'walls' with stable manure or some other material (even a living one, like a creeping vine). At the homestead to which I refer, several ferocious fires have surrounded the homestead plot, but none of the dozens of huge woodpile walls have ever burnt.

these 'sponges' maintain moisture in the system. They also act as sanctuaries for small wildlife, mostly insects, attracting other animals like birds and snakes to the area due to the increase in insect 'food supply', thereby massively boosting biodiversity.

These 'wall-sponges' constituted by organic matter are assets in the homestead, and it is interesting that they can be used to illustrate a clash between the Orphic and Promethean viewpoints, as well as to illustrate something of a negotiation between them. When the organic matter initially began to be collected and piled up, concerns were raised by peers that it 'looked messy' – prior to the building of these 'walls of organic matter', the homestead area was part of a very large lawn that was mowed frequently. Lawns are an obvious Promethean symbol – they require the frequent use of machines that run on fossil-fuels to create a mono-crop in a given area, i.e. grass, something that is not good for biodiversity, or moisture retention, wind protection, and soil health. Most notably, this kind of Promethean approach produces no food, and no useful outputs. In other words, the Promethean concern was purely one focused only on aesthetics, while the obvious ecological benefit of the organic walls was disregarded or was unable to be considered.

The interesting 'negotiation' between the Orphic and the Promethean arose when those with the latter viewpoint began to realise that the shelter and moisture retention improvements that accompanied the 'walls' resulted in trees growing much more effectively – trees had been planted sporadically around the lawn area in an attempt to improve aesthetics, but the trees had inevitably died due to the high winds, high temperatures, and bad soils (i.e. soils lacking in fertility). What was good from an Orphic perspective gradually became good for those with a dominant Promethean worldview. And it needs to be pointed out that the fossil-fuel powered machines used to mow lawns do have a place in a permaculture system – for example, many permaculturalists use weed-eaters (also known as trimmers, strimmers or brushcutters) to maintain garden paths. The difference is that a lawn serves only one Promethean purpose – it 'looks nice and neat' – while the paths in a garden are necessary in order for permaculturalists to serve numerous other purposes, like growing food, making compost, planting trees, maintaining the permaculture system, and spreading fertility around the system in general. By all means, there is space for small lawn areas in permaculture systems – for example, for children to play or for open areas where people can socialise or recline or exercise; but certainly such lawn areas must remain small in relation to other aspects of the permaculture system, from which it is necessary to 'obtain a yield' (in a manner appropriate for the context of the site), which is the focus of the following principle.

Eisenstein's 'sacred economy' and the Zeitgeist movement, discussed in Chapter 5 for their relevant Orphic qualities, both exhibited characteristics that resonate with the principle of catching and storing energy. In a sacred economy, the elements that partly constitute 'the commons' must include (for examples) clean water and sustainable energy – both of which can only be components of a sustainable system if they are continuously 'caught and stored'. The Zeitgeist movement focuses heavily on the sustainable creation of food and energy, which again must involve the recycling ('catching') of nutrients from organic human wastes and catching and storing other systemic energies (again, water and energy) from the local environment.

6.6.3 Obtain a yield

The yield referred to in the name of this principle is usually a yield *for* human beings and is thus explicitly anthropocentric, something to which Mollison (1988:7) draws attention in the following, where he adds important context in the broader ecological frame of reference wherein permaculturalists interact:

The real difference between a cultivated (designed) ecosystem, and a natural system is that the great majority of species (and biomass) in the *cultivated* ecology is intended for the use of humans or their livestock. We are only a small part of the total primeval or natural species assembly, and only a small part of its yields are available to us. But in our own gardens, almost every plant is selected to provide or support some direct yield for people. Household design relates principally to the needs of people; it is thus human-centred (anthropocentric).

Before this principle is discussed in any detail, it is necessary in the context of this study (considering what has emerged as a dichotomy between anthropocentrism and ecocentrism, i.e. something very Promethean and something very Orphic) to ‘situate’ the anthropocentrism referred to by Mollison in the broader “ethics on natural systems” (1988:7) that guides permaculture design generally:

- Implacable and uncompromising opposition to further disturbance of any remaining natural forests, where most species are still in balance;
- Vigorous rehabilitation of degraded and damaged natural systems to stable states;
- Establishment of plant systems for our own use on the least amount of land we can use for our existence; and
- Establishment of plant and animal refuges for rare or threatened species. Permaculture as a design system deals primarily with the third statement above, but all people who act responsibly in fact subscribe to the first and second statements. That said, I believe we should use all the species we need or can find to use in our own settlement designs, providing they are not locally rampant and invasive.

Anthropocentrism in permaculture is therefore predicated by an explicitly (but not exclusively) ecocentric agenda, so it would be impossible to argue that the anthropocentric aspects of permaculture are coterminous with those of ACID, which has direct ecocidal consequences, while permaculture works directly toward ecologically sustainable ends. However, having identified an anthropocentric aspect of permaculture, there is at least a possibility that there is some common starting point for ‘negotiation’ between the Promethean and the Orphic: the Promethean is exclusively anthropocentric, so the subtle anthropocentrism in permaculture could be used as a common starting point for discussion with proponents of the Promethean. This topic is indirectly explored philosophically in Chapter 7 of this study.

To return the focus of this sub-section now to the principle of obtaining a yield: the straightforward aim, as has already been encountered in the above quote from Mollison (Ibid), is to employ “all the species we need or can find [for] use in our own settlement designs, providing they are not locally rampant and invasive”. Very strict conservationists might take issue with the fact that there is no ‘indigenous-only’ approach to garden and settlement design, but Mollison (Ibid) quite realistically points out that whether

we approve of it or not, the world about us continually changes⁴⁴⁵. Some would want to keep everything the same, but history, palaeontology, and commonsense tells us that all has changed,

⁴⁴⁵ This observation – that the world constantly changes – is of importance considering what I have said, in the introduction to the study, about ACID ‘freezing’ the dialectical process, i.e. in ACID explicit attempts are made by proponents of the Promethean to prevent change (see Chapter 4) away from the domination of the shapers of discourse I discussed in Chapter 3 and their accompanying systemic elements – hence my claim that ACID ‘does not do dialectic’. Permaculture, from the observation I

is changing, will change. In a world where we are losing forests, species, and whole ecosystems, there are three concurrent and parallel responses to the environment: 1. CARE FOR SURVIVING NATURAL ASSEMBLIES, to leave the wilderness to heal itself. 2. REHABILITATE DEGRADED OR ERODED LAND using complex pioneer species and long-term plant assemblies (trees, shrubs, ground covers). 3. CREATE OUR OWN COMPLEX LIVING ENVIRONMENT with as many species as we can save, or have need for, from wherever on earth they come.

So in permaculture, there is clearly not an ‘indigenous-only’ approach to tree and plant species when it comes to the systems in which human beings interact, creating opportunity for designers to incorporate a wide variety of plants and trees that can produce yields. This is quite permissible from an ecocentric point of view because, as has become very clear already in this chapter, large expanses of wilderness must be left completely free from human interference, and in these wilderness areas indigenous trees and wildlife will be left to exist due to their inherent value as well as their instrumental value to planetary well-being – to state the obvious, a healthy planet is constituted by healthy natural systems, and as Mollison has pointed out above (Ibid), human beings “are only a small part of the total primeval or natural species assembly, and only a small part of its yields are available to us”. Yields must be understood in this broader context of planetary health.

Based on what has so far been discussed about yields, one has numerous options for designing and implementing a permaculture system that produces yields for human beings to eat. For example, with the help of my life-partner, I have during a period of three and a half years at the time of writing this sub-section, transformed the patch of lawn onto which we initially moved by creating fertile gardens containing a variety of trees, bushes, seasonal vegetables, and herbs: peach, plum, citrus, avocado and nut trees; gooseberry and raspberry bushes; (non-GMO) corn, a variety of squash (butternut and pumpkin topping the list), marrows (big and small), beans and peas (various varieties), tomatoes, cabbages, cauliflowers, carrots, broccoli, lettuce, sweet peppers, chilli peppers, kale, and peppadews; mint, basil, thyme, oregano. All these are generally ‘inter-planted’, i.e. planted amongst one another and amongst non-food-yielding plants rather than in single patches of only one type of vegetable, and they are companion planted (see the end of principle number one) where possible. These methods prevent insects and ‘bugs’ from being able to identify vegetables, and they tend to get deterred from what to them must seem like competing plant odours in the garden (thus preventing the need for chemical pesticides in the permaculture garden). The fruit and nut trees are too young to produce yields yet, but they eventually will (however, a method to prevent birds from eating *all* the plums will have to be devised). Nor has everything in the list been successful – various plants have had problems, such as tomatoes getting blight during an unusually long period of wet weather during tomato-growing season – so the gardens are a work in progress. Success has not been had with grapes and potatoes yet, but with time the system might be able to cater for them. However, these are not system failings, but rather expected challenges that gradually lead to adjustments as the system evolves and its parts synergise.

The Permaculture Association⁴⁴⁶ offers the following comments regarding to the principle of obtaining a yield:

Permaculture stresses self-reliance – the ability to meet many of our own needs from our own resources. In a high rise flat that might be a window box with lettuces, as a whole community it may be the majority of our food. We can no longer rely on global food systems to meet our

have just highlighted, is clearly different.

446 <https://www.permaculture.org.uk/principle/3-obtain-yield> accessed 18 January 2016

needs, or on there always being enough fossil-fuels to bring the crops to us. Permaculture stresses the use of plants that are functional – food medicine, fibres, but this doesn't mean boring or dull. Functional designs and plantings can also be beautiful – another important yield.

These comments from the Permaculture association need no further elaboration as they are perfectly contextualised by information that has been encountered already in this chapter and elsewhere in this study.

The Zeitgeist movement is the obvious candidate from Chapter 5 where there is explicit focus on producing a yield – in a natural law / resource based economy (NLRBE), living areas are designed to produce food via regional automated food production methods, e.g. vertical farm technology and low energy/low impact cultivation methods such as hydroponics, aquaponics and aeroponics. These methods are perfectly suitable in a permaculture system, provided that the food-producing system gives back more energy than was used in the creation of the system.

6.6.4 Apply regulation and accept feedback

The Permaculture Association begins its explanation of this principle as follows:

This principle deals with the self-regulatory aspects of permaculture that limit or discourage inappropriate actions and behaviours. An obvious example of this is that permaculture has a set of ethics that aim to regulate how permaculture designers and practitioners behave, in particular that we accept limits to our consumption so that we do not take more than the earth is able to provide.

This explanation draws attention to regulation as a phenomenon in permaculture quite opposite to the environmentally disastrous addiction to 'endless growth' and the inevitable consequence of endless waste and endless destruction of nature characteristic of ACID. Endless growth and endless waste in a finite system are clearly and unambiguously 'inappropriate', a word that appeared in the opening quote to this sub-section. Growth and waste would therefore have to be regulated – Mollison (1988:7) aptly uses the phrase "govern[ing] our greed". Growth would have to become something less abstract than indices like GDP that increase when natural entities like forests are cut down for various reasons linked to the *modus operandi* of ACID, and 'growth' would possibly have to denote something more appropriate considering 'natural limitations', i.e. the growth of forests, the growth of food gardens, the growth of the fresh water supply. In a system that applies regulation, these natural resources would certainly be used by human beings, but in a manner where regulation of the use of resources is of central importance. In Chapter 5, Eisenstein offered a glimpse of a 'sacred' economic model that did indeed rely heavily on regulation; to repeat some information about a commons-backed currency from that sub-section, information pertaining directly to regulated activity:

Once we have decided how much of each commons should be made available for use, we can issue money 'backed' by it. For example, we might decide that the atmosphere can sustain total sulfur dioxide emissions of two million tons a year. We can then use the emissions rights as a currency backing. The same goes for the rest of the commons. The result would be a long list comprising all the elements of the commons we agree to use for economic purposes.

Aspects of my own application of permaculture principles have already been glimpsed in the discussion of principles one to three, and more can be understood about principle four by

considering the following elements of applying regulation in my own life: water is used in the system, but only in a manner whereby none ever leaves the system (indeed, there is no sewer connection); electricity can be used, but only for minimal lighting and for powering certain electrical items deemed by the context to be essential (lights, laptop computer, certain tools); showers can be taken, but they must be taken as quickly as possible and as infrequently as viably possible; use of the gas cooking ring is acceptable, but only when the solar cooking and rocket-stove options are not viable.

To understand what is meant by feedback, one can consider Mollison's (1988:32) use of a bicycle-riding analogy: he says that "stability in ecosystems or gardens is not the stability of a concrete pylon; it is the process of constant feedback and response that characterises such endeavours as riding a bike". It would be impossible to ride a bicycle without receiving constant feedback during the process, for example, slowing down by using the brakes when the bike is going too fast downhill – here the increasing speed is feedback that triggers the pulling of the brakes. So too would it be impossible to interact in a natural system in a sustainable manner without paying careful attention to the feedback that the system constantly provides, and using the feedback as a trigger to make small changes to the system – more on the process of making changes to the system in discussion of principle nine, namely, 'use small and slow solutions'.

Examples of system feedback are: gardens staying moister for longer with the application of mulch; certain types of mulch being blown out of place by a strong wind and damaging seedlings; trees that do well initially in a certain location but then take a drastic turn toward deterioration; placing a plant next to a different plant and seeing it do well, or not so well; placing a plant in the shade or sun and seeing it do well, or not so well; building a structure in a certain way using a certain material and having constantly to do maintenance repairs on the structure; bringing people into the homestead area and getting similar themes (good or bad) raised by the different people; experiencing the heat of the summer and its impact on personal energy levels; adding urine to (or urinating directly onto!) the roots of different trees and noticing an increase in growth rate (an indication that a tree is a heavy nitrogen feeder) or a deterioration of the tree's growth. In each of these examples, an action has a consequence – the consequence is the feedback, presuming that the person 'listens to' the feedback and works at understanding the cause/effect relationship, making adjustments where necessary.

Looking back to the 'Orphic offerings' in Chapter 5 (in addition to what has already been attributed to Eisenstein above), phenomena encountered there relevant to the principle of applying regulation and accepting feedback is, firstly, that of the 'unnamed movement' traced by Hawken in *Blessed Unrest*. Hawken described the movement as one "working towards ecological sustainability and social justice" (2007:2) and can be said to participate in a process of keeping Promethean action 'in check', i.e. regulating it. It would have to do this partly by 'feeding back' information that it has gathered to people in general, to the offending organisations and corporations, to political entities, etc. Indeed, the organisations, groups of people, and individuals who constitute the unnamed movement are largely committed to regulating action that causes social and ecological injustice, accepting feedback from nature and society and the economy, and feeding this information into the broader socio-political and economic system. Next, the Occupy Movement participated in much the same kind of process, except that its focus was initially explicitly economic, but certainly ecological and social concerns fell under its remit. Finally, the Zeitgeist Movement too aims for a "system of

direct resource management and scientific application in the pursuit of a post-scarcity or abundance economy to meet the needs of the human species, while securing the integrity of the habitat” (TZM Defined, pg.178) – this has clear connotations of regulation and indeed resonates with the aims of permaculture as so far described and analysed in this chapter. This resonance, as well as the place of feedback in TZM, becomes very clear in the following quote from TZM Defined, pg. 260: “Connected to the design process, literally built into the... ‘Optimize Design Efficiency’ function, is dynamic feedback from an Earth-wide accounting system that gives data about all relevant resources that pertain to all productions”.

6.6.5 Use and value renewable resources and services

In contrast to the central position occupied by non-renewable energy (i.e. fossil-fuels) in ACID (as seen in Chapter 2), renewable resources (and sustainable systems) are centralised in permaculture. However, fossil-fuel does play an important transitional role in permaculture in that it is used to establish sustainable systems. These points are evidenced in the following from the Permaculture Association⁴⁴⁷: “Permaculture design aims to make best use of renewable resources to create, manage and maintain high yielding systems, even if some non-renewable resources are needed to establish the system in the first place”. It is therefore perfectly acceptable for conventional power tools, or earth-moving or –digging machines (etc.), to be used in the setup of permaculture systems. Mollison (1988:14) adds the following proviso, the first of three “practical design considerations”: “...providing that in their lifetime, [the systems] store or conserve more energy than we use to construct them or to maintain them”. The other two design considerations are:

- The systems we construct should last as long as possible, and take least maintenance.
- These systems, fuelled by the sun, should produce not only their own needs, but the needs of the people creating or controlling them. Thus, they are sustainable, as they sustain both themselves and those who construct them.

This imperative in permaculture to create sustainable systems that use renewable energy sources, and which “store or conserve more energy than we use to construct them or to maintain them”, stands in direct contrast to what can broadly be called the Promethean construction industry, which, as was seen and evidenced in Chapter 2, is responsible for “more than 40 per cent of global energy use and one third of global greenhouse gas emissions, both in developed and developing countries” (quoted from a UN source – see Chapter 2). As was seen in Chapter 2, the constant input of fossil-fuels is required for the powering, maintenance, heating and cooling of Promethean buildings and systems, buildings and systems that almost exclusively are accompanied by the ‘flattening’ of surrounding natural areas with no creation thereafter of biodiverse natural systems. In permaculture, buildings are preferably made out of earthen and/or locally-sourced materials, with the aim being to power the buildings via solar, wind, and tidal energy, as pointed out by the Permaculture Association: “Wind, sun and waves are key renewable resources that can help us move towards sustainability”⁴⁴⁸. Beyond these obvious alternative energy sources, the Permaculture

447 <https://www.permaculture.org.uk/principle/5-use-and-value-renewable-resources-and-services>

Accessed 11 February 2016

448 <https://www.permaculture.org.uk/principle/5-use-and-value-renewable-resources-and-services> accessed 31 March 2016

Association draws further attention to the role of forests in the context of renewable energy: “Recreating forests and soils are two of the most important tasks of the twenty first century”. The importance of both forests and soils has featured already in this study, but to elaborate briefly on it here, attention can be drawn to the less obvious fact that forests and soils are renewable sources of energy – in natural conditions, woodlands constantly renew themselves with new trees, and soils with more soil; and biodiversity naturally increases alongside the increase of healthy forests and soils. Humans can design systems in which these natural processes are mimicked, which is exactly what permaculturalists do, i.e. design (and implement) such systems. Even more generally, without explicit focus on design and implementation of systems, permaculture focuses on sustainable use of renewable resources, again evident in this from the Permaculture Association (Ibid): “We need to understand the renewable resource we are using to ensure appropriate use, e.g. how many trees can we take from a woodland without damaging it? Harvesting of wild plants and animals can be part of the overall yield of a system” – trees from the woodland, wild plants and animals are all energy sources in this line of thinking, and if managed correctly they become renewable energy sources.

I will add that I do not yet solely use the characteristic sources of renewable energy such as solar and wind electricity systems because the current phase of my ‘permaculture journey’ is the transition period away from exclusive reliance on fossil-fuels – I am currently experimenting with one big solar panel and one deep cycle battery in order to learn more about the process, and I can safely say that I can power all my lighting and computer-power needs with this small solar system. However, as discussed in an earlier section of this chapter, almost all appliances and energy-heavy apparatus have been excluded from the current homestead, justifying the negligible amount of ‘on-grid’ electricity (sourced via a single extension cord) generally used to run two laptop computers, speakers for music from a laptop computer, several energy-sensitive lights, and two cellular phones. Hot water, as already pointed out, is heated in a coil of black pipe on a sun-facing roof, and via rocket-stove fires fuelled by off-cut wood sourced locally from a saw mill. This rocket stove is also a major source of energy for cooking, as is a parabolic solar cooker, followed finally by a small gas ring cooker, used sparingly. An orchard has been planted, gardens are continuously maintained, and soils are constantly ‘built’, all of these being less obvious examples of renewable systems.

At the time of writing this sub-section, my life-partner and I have acquired an acre of land on the outskirts of town. There is (and will be) no ‘on-grid’ electricity there, and a small solar electric system (the one I am currently experimenting with) will be the only source of electricity there. The initial aim is to plant a food forest containing numerous sources of fruit and vegetables, but also indigenous canopy trees – these trees will be coppiced gradually to provide wood for rocket stove fires. The ‘coil-of-pipe-on-the-roof’ hot water system, as well as the parabolic solar cooker, will continue to feature heavily in the system as renewable sources of energy. Finally, a simple gas ring cooker will act as a back-up cooking source.

The only explicit reference made to renewable energy sources in Chapter 5 appeared in the section about the Zeitgeist Movement. There it was seen that, simply, renewable energy sources would be used in a natural-law resource based economy (NLRBE), and that such energy sources would be implemented in different areas depending on the suitability of the different areas for a given energy source; i.e. there is no ‘one size fits all’ approach to how renewable energy sources are implemented, but rather the overall NLRBE is designed (and here again there is strong resonance

with permaculture's focus on *design*) according to principles of sustainability that in turn are derived from Earth's 'carrying capacity'. The Earth's carrying capacity, it was seen in the sub-section about the Zeitgeist Movement, is determined by a "dynamic feedback from an Earth-wide accounting system that gives data about all relevant resources that pertain to all productions", and this clearly resonates with the aim in permaculture (as quoted in this sub-section) "to understand the renewable resource we are using to ensure appropriate use, e.g. how many trees can we take from a woodland without damaging it?" A less explicit reference to the issue of renewable energy was made by Paul Hawken in the sub-section about *Blessed Unrest*, a comment that speaks for itself: "[T]he way to change the world is to change one's own practices, including one's home, *source of energy*, method of agriculture, diet, transport patterns, and communities" (emphasis added). These observations from Hawken remind one that no single act can constitute a transition to a sustainable system with clear Orphic characteristics.

6.6.6 Produce no waste

Produce no waste – a very straightforward permaculture principle that has to a considerable extent already featured in the discussion of previous principles. For example, in the discussion of principle number two, Mollison was quoted regarding the emphasis in permaculture of recycling nutrients and energy, which I have illustrated in this chapter already via reference to my use of a compost toilet and my actively-chosen lack of a sewer system that would otherwise literally flush fertility and water down the toilet. All organic waste in the household can be recycled, returned as fertility to the gardens, thereby directly dealing with the massive problem common to Promethean 'man' of externalities, as explained by Eisenstein in Chapter 5. The Permaculture Association⁴⁴⁹, as can be seen in the following extract from its website, focuses similarly on organic household wastes, and elaborates on the principle of producing no waste using the concepts of outputs and inputs: "Waste is just an unused output. If the output is unusable, or downright dangerous, we probably shouldn't be producing it in the first place (plutonium for example)". The example of plutonium as a substance that should not be produced in the first place is relevant in light of what was explored in Chapter 1 regarding the conundrum of nuclear waste, and therefore nuclear energy as a whole – as well as all the other industries that similarly produce waste products with dire consequences for ecologies. Furthermore, the Permaculture association (*Ibid*) states that permaculture

aims to connect inputs and outputs so that different elements meet each other's needs. For example, if I save my kitchen waste and put it into a compost bin, I can make compost that can then be used to grow crops which I can then eat. I have saved waste (kitchen scraps that produce methane in landfill sites, and need transport to get it there), reduced external inputs (I don't need to buy compost) and increased yields (better soil, more crops, more worms.)

This is clearly a proactive and healthy use of a substance – kitchen waste, which so often thrown away in the systems constituting ACID. The kitchen waste, in this Orphic approach, becomes part of the substance – namely, soil – from which food is grown. As I have pointed out elsewhere in this study already⁴⁵⁰, In *Cradle to Cradle*, McDonough and Braungart make the point that *waste is food*; indeed, a chapter in the book (2002:92-117) is called 'Waste equals food' – though, I must add, this

449 <https://www.permaculture.org.uk/principle/6-produce-no-waste> accessed 11 February 2016

450 See Chapter 5, sub-section 5.5.

is not the case in exclusively Promethean systems, where waste is seen as an ‘easily discardable externality’. Mollison (1998:12) provides an example of a process where, in permaculture, designers consider what the optimal process is for dealing with wastes; here Mollison uses the example of cow manure as a waste product that can be incorporated into a designed system in differing ways:

For example, if we have a ‘waste’ such as manure, we can leave it on a field. Although this is of productive use, we have only achieved one function. Alternatively, we can route it through a series of transformations that give us a variety of resources. First we can ferment it, and distil it to alcohol, and secondly route the waste through a biogas digester, where anaerobic organisms convert it to methane, of use as a cooking or heating gas, or as fuel for vehicles. Thirdly, the liquid effluent can be sent to fields, and the solid sludge fed to worms, which convert it to rich horticultural soil. Fourthly, the worms themselves can be used to feed fish or poultry.

This way of thinking about waste can be applied to various aspects of the household. An excellent example I have encountered is the ‘eco-brick’⁴⁵¹, a plastic bottle filled with bits of ‘throw-away’ materials like cellophane wrapping and polystyrene packaging – indeed, any throw-away material that would otherwise be heaped into a landfill site can be incorporated as a filling for an eco-brick – so long as the material can be squeezed into the neck of the plastic bottle. The bottles are packed until hard, and then used as a replacement for a traditional brick. Once the structure is finished, no sign of the eco-bricks remain, because they are plastered over, as is often the case with regular brick building methods. This example demonstrates how one of the problems for ecology explored in Chapter 1, namely landfill waste, can be proactively mitigated using a permaculture principle.

This is an appropriate sub-section to introduce two important permaculture ‘rules’, “the rule of necessitous use” and the “rules of conservative use” (Mollison 1988:3). Reducing waste, as will be seen in the following extract from *The Designer’s Manual*, is mentioned in explanation of the rules, hence the direct relevance to this sub-section. Less obvious may be the attempt to produce no waste by deliberately abstaining from use of resources in the first place: the rule of necessitous use says that

we leave any natural system alone until we are, of strict necessity, forced to use it. We may then follow up with rules of conservative use – having found it necessary to use a natural resource, we may insist on every attempt to: - Reduce waste, hence pollution; - Thoroughly replace lost minerals; - Do a careful energy accounting; and - Make an assessment of the long-term, negative, biosocial effects on society, and to act to buffer or eliminate these. (Ibid)

These rules are clearly Orphic: they demand of human beings considered, ecologically-sensitive action that circumvents various prominent problems with the Promethean paradigms and industries encountered in early chapters of this study.

Turning now to overlaps between this permaculture principle – produce no waste – and content featuring in Chapter 5. First, in the exploration of specific ‘older cultures’, it was seen in the context of hunting that the “major principle is that everything caught is consumed and there is no waste” (Vetlesen 2012:38). Then it was seen in the overview of *Blessed Unrest* that one example of an endeavour that constitutes participation in the ‘unnamed movement’ spoken about by Hawken (2007: 11) is this: “Clayton Thomas-Muller speaks to a community gathering of the Cree nation about waste sites on their native land in Northern Alberta, toxic lakes so big you can see them from outer

451 <http://www.ecobricks.org/> accessed 11 February 2016

space.” Eisenstein’s ‘law of return’ is also clearly relevant and provides clearer elaboration on the idea of producing no waste: Eisenstein (.pdf pg.124) says that in

an ecology, no species creates waste that other species cannot use – hence the maxim, “Waste is food.” No other species creates growing amounts of substances that are toxic to the rest of life, such as dioxin, PCBs, and radioactive waste. Our linear/exponential growth economy manifestly violates nature’s law of return, the cycling of resources.

There may be a substance left-over from an activity associated with people and/or animals, but the by-product is one that is incorporated into a given system in ways that are good for all components of the given system; this is all obviously a radical detour from the *modus operandi* of Promethean industries (something to which Eisenstein alludes in the above quote, where again radioactive waste is brought to the forefront) that directly cause the ecological destruction highlighted in Chapter 1. Finally, in the exploration of the Zeitgeist Movement, the important concept of ‘technical efficiency’ was introduced; technical efficiency “seeks to maintain the environment, maintain human health and essentially keep balance in the natural world. The reduction of waste, resolution of problems and the maintaining of alignment with natural law is the common sense logic embodied” (TZM *Defined* .pdf pg.112). Moreover, this technological approach, which is intent on maintaining ‘balance’ in and with nature is very different from Technological underpinning of ACID, which is demonstrably an instantiation of the ‘assault’ on the earth that occurs in the context of Heidegger’s ‘Enframing’, as discussed in Chapter 3. In fact, ‘technical efficiency’ as envisaged by the Zeitgeist Movement is an instance of the benign use of technology as theorised by philosopher of technology, Bernard Stiegler (2010:19), who sees technology in Derridean terms as a *pharmakon* (poison and cure).

6.6.7 Design from patterns to details

Patterns in permaculture are of central importance. Examples of patterns, and indirectly of the importance of patterns, are evident in the following comment by Mollison (1988:12), one in which he clearly raises issues with aspects of ‘designs’ common to ACID: “Perverse planning is everywhere obvious: houses face not the sun, but rather the road, lawns replace gardens, and trees are planted to be pruned and tended”. In the first example of houses not facing the sun, the implication is that the sun is an essential factor to consider when designing and building a house (or any structure) – consideration of the sun’s ‘pattern across the sky’ means that a house can be built to be passively heated by the sun in winter and cooled in summer, for example by incorporating a roof at just the right height and slope so that the lower position of the sun in winter allows light to enter windows, while in summer its higher position in the sky will direct heat onto the roof and not through windows. Solar panels can also be placed on appropriately designed and constructed roofs that face the sun – the cyclical movement of the sun across the sky is the pattern, while the roof built at the right height and facing the right position in the sky is the detail. Lawns, the next example, require continuous maintenance for no return (think no yields), a counterproductive pattern; but humankind continuously needs fresh food (a pattern), and a productive garden (the functioning of which involves numerous intersecting patterns that must be respected) will provide for some of this need. The final example – trees that need constant tending – again reveals a counterproductive pattern,

and by planting fruiting trees one is respectful again of a pattern of needs, in this case again the need for food.

Another excellent example of designing from patterns to details is that of 'zoning', described by the Permaculture Association⁴⁵² as "a design method that is used to help generate an overall pattern for the site and ensure that it is designed to be energy efficient". A simple example of this is the positioning of the 'herb area' in one's garden: herbs are used frequently for many meals (a pattern), so herbs near the kitchen (the detail) – preferably right outside the kitchen – makes sense because of the saving of time and energy required to pick the herbs. The house (i.e. physical building) is generally considered to be zone one in permaculture, wherein most of the necessities for daily living should ideally be accessible – 'objects' here might be accessed several times a day, for example, the herb garden as already mentioned. Zone two would not necessarily be accessed several times daily, though it might be accessed once or twice a day, so one would design to place less frequented aspects of the home there. This process of zoning typically moves from zone one to zone five. In big permaculture designs, zone five would be areas of wild woodland left almost entirely free from human interference. However, even the smallest design can identify zones – for example, a bedroom can be designed according the patterns of use of objects, with the most frequently used objects appearing in zone 1, and the least in zone 5. Regardless of what is being designed, the aim with zoning is to take note of patterns, and to tailor the detail so that energy is not wasted in a system. This system of design can be 'scaled', i.e. applied to bedrooms, houses, farms, gardens, neighbourhoods, communities, cities, etc. The Permaculture Association (Ibid) points out that designing from patterns to details gives "an overall shape to the design, before getting too carried away with the specific details to start with" – this is a very useful practical approach to design where the 'overall shape' is determined by natural elements of a system, as opposed to the often exclusive anthropocentrism common to Promethean endeavours.

I can comment personally on the principle of designing from patterns to details by mentioning that in the setup of my rustic permaculture homestead, it became clear that the dominant pattern of movement of people through the homestead was around the kitchen, the rocket stove, the dish-washing area, and the nursery where seedlings are planted and need frequent watering. The pattern of movement showed that the rocket stove needs to be central because one must keep adding wood to it when cooking; that the kitchen needs to be accessible from more than one entrance due to a heavy flow of movement through it; that the dish-washing area is not in the kitchen because flies get attracted to dishes that get piled up for even a short period of time during summers; and that the nursery needs to be very central because of frequent watering needs. Gradually these components of the homestead were constructed to constitute zone one, and movement occurs almost cyclically between components – i.e. one can walk out of one entrance of the nursery, into one entrance of the kitchen, out of a second entrance to the kitchen, past the rocket stove, past the washing-up area, past the bedroom, and re-enter the nursery through a different entrance, and one would have completed a circular movement through the zone.

In Chapter 5, Sheldrake's morphic field hypothesis was encountered, where "the regularities of nature are essentially habitual and that a kind of memory is inherent in nature. This habit model implies that past patterns of activity influence those in the present" (Sheldrake 1994:129). There is

452 <https://www.permaculture.org.uk/principle/7-design-patterns-details> accessed 22 February 2016

definitely some overlap between what Shelldrake is doing and this permaculture principle: the principle is 'design from patterns to details', while Shelldrake focuses on habits and 'past patterns of activity' that, via the mechanism of morphic resonance, determine specific details of members of a species. Then the sub-section on Hancock's 'civilisation with amnesia' focused on a civilisation lost to history, a civilisation that left very clear indications of its existence, and of its knowledge of cyclical cosmic patterns (for example, precession of the equinoxes) – knowledge that was intricately *detailed* into megalithic stone architecture all over the world; indeed, in that sub-section the mathematician Robert Bauval was quoted for his insistence that the positioning of the pyramids on the Giza plateau correspond to two important celestial events that point unambiguously to 10,450 BC: "at that date only [...] we find that the pattern of the pyramids on the ground provides a perfect reflection of the pattern of the stars in the sky" (Hancock 1995:444). Finally here, zoning as an example of designing from patterns to details is also reminiscent of the Zeitgeist Movement's advocacy of designing new cities and areas populated by people using 'emergence thinking', a type of thinking referred to in that sub-section as 'logical deduction' based on the natural patterns of a given area.

6.6.8 Integrate rather than segregate

At this stage of the chapter, various practices have already been described, practices that simply but proactively integrate aspects of daily life into the home and/or community – growing food, catching and storing water, planting plants and trees that provide food and fuels for various uses, using the sun's energy to heat water and to cook food (when conditions allow) – I have commented on all of these practices already in this chapter. The crucial importance of this process of integrating such 'logistic' elements of living into immediate 'living areas' is commented on by Mollison (1988:6-7):

One certain result of using our skills to integrate food supply and settlement, to catch water from our roof areas, and to place nearby a zone of fuel forest which receives wastes and supplies energy, will be to free most of the area of the globe for the rehabilitation of natural systems. These need never be looked upon as 'of use to people', except in the very broad sense of global health.

This Orphic consequence of integration, namely the consequence of rehabilitation of natural systems, is of critical importance considering the ecological issues explored in Chapter 1. The direct causes of ecological problems were identified in Chapter 2, and it is safe to say that the industries causing the problems are ones that generally are segregated from the areas wherein the vast majority of people actually live and work, i.e. cities – 'monocrop agriculture' is a case in point, because it occurs on massive tracts of land usually very far away from cities. By integrating 'heterogeneous forms of agriculture' into settlements, as pointed out by Mollison, land currently used for Promethean agriculture can be rehabilitated, solving various issues explored in Chapter 1, issues such as deforestation, loss of topsoil, and loss of biodiversity.

Integration in permaculture is intimately bound with cooperation: for example, an integrated system is one where rainwater is caught and stored, used to water plants and trees that provide food and fuels, and heated with the sun's energy to provide warm water for washing purposes... and then the grey water gets returned into the system rather than directed into a sewer system that literally segregates grey water – again, I have implemented these systems in my own rustic permaculture abode. In this example, by being integrated, the listed phenomena can be said to exist in a

cooperative state. Cooperation features heavily in permaculture: Mollison (1988:2) explicitly states early on in the *Designer's Manual* that life "is cooperative rather than competitive, and life forms of very different qualities may interact beneficially with one another and with their physical environment. Even 'the bacteria... live by collaboration, accommodation, exchange, and barter'". This means that the permaculturalist can experiment with the integration of various non-living system components, as already illustrated, or with different living system components, for example with 'companion planting', which has been commented on already in this chapter. But cooperation – as an extension of integration – is not only a systems-design approach in permaculture, but is also elevated to a position of central importance, as can be seen in the following from Mollison:

Although initially we can see how helping our family and friends assists us in our own survival, we may evolve the mature ethic that sees all humankind as family, and all life as allied associations. Thus, we expand people care to species care, for all life has common origins. All are 'our family'. (1988:3)

And:

Cooperation, not competition, is the very basis of existing life systems and of future survival. (1988:3)

These considered sentiments from Mollison are surely ones that epitomize the Orphic attitude. Community in this sense is not something that only occurs when people help each other, but when they help create conditions conducive to the flourishing of *all* life. The Orphic attitude is again evident in the following comments, where Mollison's opposition to the Promethean attitude is brought to the forefront:

The wage-slave, peasant, landlord, and industrialist alike are deprived of the leisure and the life spirit that is possible in a cooperative society which applies its knowledge. Both warders and prisoners are equally captive in the society in which we live. (1988: 1)

And:

A basic question that can be asked in two ways is: 'What can I get from this land, or person?' or 'What does this person, or land, have to give if I cooperate with them?' Of these two approaches, the former leads to war and waste, the latter to peace and plenty. (1988:3)

Permaculture therefore is partly a philosophy and practice of integration and cooperation, a shift in focus from the competition and segregation characteristic of ACID to how "parts interact, how they work together with each other, how dissonance or harmony in life systems or society is achieved" (Mollison 1988:1-2). In permaculture design, "we see time, space, and functions all used in a complex and non-competitive way, and glimpse something of the potential for designers to enrich human societies providing that no individual or group claims a right to sole use at all times for an area" (Mollison 1988:26). The importance of this proviso cannot be overstated – Promethean 'man' has for centuries claimed the right to 'sole use at all times' over various areas, and the ecological crisis is partly the result. In addition, and needless to stress, the anthropology underpinning Capitalism is the social Darwinistic one of relentless competition, which is (erroneously) seen as being indispensable for 'progress', as I have demonstrated in Chapters 1 to 4.

The Permaculture Association⁴⁵³ begins its commentary on the principle of ‘integrate rather than segregate’ by pointing out that one

of the most important insights from ecology is that the relationships between things are as important as the things themselves. A healthy vibrant ecosystem is a mass of connections and relationships. That's what we are trying to create with a permaculture system.

The Association provides some very useful ‘integrated design approaches’ to take into account that ensure for a resilient system. First, each “important function is supported by many elements” – an example of an important function is food, so it is beneficial to have many elements of the system producing food rather than just one aspect of the system doing so. An example here would be to have food being produced by numerous crops (plants and trees, even edible weeds) harvested at different times and not all susceptible to the same diseases, as well as having chickens for eggs and meat. Second, each “element provides many functions”; an example is the chicken, which is one element of a homestead but it serves several functions such as providing eggs, meat, feathers, and manure, and more chickens by way of reproducing themselves; chickens can also be guided through the home garden to eat ‘pests’, i.e. insects that eat valuable food crops. Third and finally, “[r]elative location”, which is very similar to ‘zoning’ as described in the previous sub-section, an example being positioning herbs right next to the kitchen due to the high frequency of herb use for meals.

Integration and cooperation (versus segregation and competition) arose as themes in Chapter 5 where the focus was on various Orphic ideas. Specific ‘older cultures’ were “most often cooperators, not dominators” and “the anthropological record shows that not one culture believed itself to be separate from and superior to nature”; they saw that it “is our destiny to cooperate with the rest of creation” (Hartmann 1998:154). In the discussion about Hawken’s *Blessed Unrest*, a strong sense of integration and cooperation between diverse members of the ‘unnamed movement’ was noticeable due to their common motivation to respond to the injustices that accompany dominant Promethean activities; indeed, Hawken goes so far as to liken the ‘unnamed movement’ to a planetary immune system (something that is by default integrated and cooperative) that has arisen in response to specific problematic human actions, practices, industries, and attitudes. Eisenstein (.pdf pg.132) was encountered stating that part of his vision for a ‘sacred economy’ involves “decentralized, self-organizing, emergent, peer-to-peer, ecologically *integrated* expressions of political will” (emphasis added). Finally, it was seen that Sheldrake’s theory of morphic resonance, if taken seriously, could encourage one towards the realisation that people are an *integrated* part of their species, and that the actions of one member of the species has implications for the species as a whole; of course, according to the integrated and cooperative Orphic views, one species cannot exist in isolation from all the other species on the planet, and Sheldrake’s theory can again be used to encourage the shift in thinking away from Scientific reductionism.

453 <https://www.permaculture.org.uk/principle/8-integrate-rather-segregate> accessed 23 February 2016

6.6.9 Use small and slow solutions

The Permaculture Association⁴⁵⁴ begins its commentary on this principle by pointing out that “systems should be designed to function at the smallest scale that is practical and energy efficient (rather than the biggest). In some ways this is a value judgement. Permaculture favours small scale and local, over big scale and global. Usually.” Issues with ‘one-size-fits-all’, large-scale industrial agriculture were explored in Chapter 1; Mollison (1988:11) alludes to some of those issues when he says that every “widespread modern agricultural system needs great energy inputs; most agriculture destroys basic resources and denies future yields”. By localising food production into gardens, communities, neighbourhoods, and settlements in general, numerous *small* organic gardens free from the ‘need’ for industrial chemicals can replace the ecologically-damaging large monocrops that now constitute the vast majority of the world’s food supply.

Slowing down in the context of permaculture allows time for various principles already commented upon to be implemented. For example, a slow approach to the establishment of a homestead, food garden, or settlement, will allow one to spend time observing (principle one) the given area, its fauna and flora, its interdependencies, the flow of energy through the area, and so on; will allow one gradually to integrate different means of catching and storing energy (principle two); will allow for ‘byproducts’ (i.e. wastes) to be processed (principle six) and gradually incorporated as fertility into the system; etc. This slow approach is one that stands in sharp contrast to the ‘slash-and-burn’ approach employed in industrial agriculture, which involves clearing a natural area of trees and life immediately for large monocrop output and maximum financial profit in a minimum of time. This Promethean approach is one that quickly destroys ecosystems by immediately wiping out all that previously lived in the area and by applying fertilizers, pesticides and herbicides to the land, while the permaculture approach that values smallness and slowness gradually strengthens ecosystems by increasing biodiversity, optimising moisture retention, creating organic fertility, etc. Mollison (1988:53) provides some simple practical guidance on how to keep the implementation of such a permaculture system small and slow: the “golden rule is to develop the nearest area first, get it under control, and expand the perimeter. A single perimeter will then enclose all your needs”. Each permaculture action within the perimeter can also be chosen wisely for the optimisation of the components of the permaculture system: “Make the least change for the greatest possible effect” (Mollison 1988:35).

An important feature of small and slow solutions is that, being small and slow, they are within the reach of ‘the average person’. The average person is generally dependent on ACID’s large-scale systems, systems that via numerous means are perpetuated whether the average person likes them or not (see Chapter 4 for information pertaining to selected perpetuation mechanisms). If one is caught up in consumer lifestyle where s/he has very few realistic options but to compete in the job market to pay for the necessities of life, it is unlikely that s/he can make big and quick changes to her or his life due to constraints of time, money, and energy. However, the small and slow implementation of changes to people’s lives allows them gradually to make steps towards a compost system, a food garden, water catchment and storage systems, grey water systems, alternative energy sources, and other permaculture-related system components. These small changes that are made gradually eventually add up, and eventually some level of self-sufficiency will be attained,

454 <https://www.permaculture.org.uk/principle/9-use-small-and-slow-solutions> accessed 24 February 2016

which is a solution (albeit one that comes about slowly) to the problem of settlements where each household has water and energy piped in, sewage and grey water piped out, and no local sources of sustenance – all of which comes at immense ecological expense as seen in Chapters 1 and 2. It must also be mentioned here that this small and slow approach to implementing solutions to ecological problems can be applied not only in the individualistic context of ‘the average person’, but the average neighbourhood, city, region, and country – the methodology and related methods remain much the same.

A brief comment must also be made here in support of small and slow solutions characteristic of permaculture endeavours, as opposed to large and fast approaches common in ACID. If a proposed ‘solution’ turns out to be inappropriate for a specific context, then due to it being small and slow it would not have caused too much damage in an existing system. An example of this in permaculture is introducing a plant that at first grows quickly and provides shade in an overly sunny area, which may seem like an asset in a hot and dry climate. But later the plant may prove to be invasive, to reduce the growth rates of other plants, and to starve other plants of water – this is not a beneficial relationship between plant species and should be avoided in a permaculture system. Having slowly introduced a small number of such an invasive plant into the system, it is relatively easy to eliminate it from the system, allowing for different shade-providing plants to be incorporated instead; nothing much would have been lost in this endeavour. On the other hand, large and fast ‘solutions’ in ACID – for example, a massive fish farm in the bay of a city – appear at massive financial and energy costs, so there is incentive to keep them running even when massive ecological problems occur, in this instance problems like an increase in shark attacks at local beaches, as well as algae issues from the unnaturally high levels of fish-food substances (monocropped grains) and fish manure concentrated to the fish farm area.

My life-partner and I did not initially take heed of this principle, and suffered greatly for our rash action. We had perceived a two-fold problem, first in our own lives when we worked ‘thankless’ full-time jobs that required increasing amounts of time and energy, leaving little of either for anything else, and second in the broader context where our lifestyle was totally reliant on ACID’s systems and therefore ‘by default’ perpetuated practices that cause massive ecological harm. So we chose to quit our jobs and instead move onto an empty piece of a friend’s land. Not having a roof over-head, no kitchen, no toilet facilities... really nothing – we lived in a camping-tent to begin with – we had to *quickly* construct a functional living environment from scratch, which was very stressful and resulted in decisions being made too quickly. The garden areas were also made too big, and even at the time of typing (three and a half years after moving to the land) there are garden beds that cannot be tended because two people can only ‘do so much’. We would have been far better off had we acquired a small cabin immediately upon arriving at the land, and finalised all aspects of our homestead before getting too ‘carried away’ with big food gardens. The small and slow approach would have allowed us to have taken greater heed of other important principles. As mentioned already in this chapter, we have become custodians of our own acre of land, and we are slowly considering what the best course of action is for the land; at the time of writing, a small cabin has been partially constructed and it will soon be placed on the acre, with the intention being to create a small perimeter around the cabin to begin with, and then to develop the permaculture system within that perimeter – as suggested by Mollison. As I have stated elsewhere, the intermittent references to personal experience of the implementation of permaculture principles – sometimes

successfully, sometimes erroneously, but always with concomitant 'learning' – is based on the methodological assumption, that knowledge, or theory, cannot be divorced from practice.

Finally here, to link this principle to content from Chapter 5: the 'unnamed movement' written about by Hawken in *Blessed Unrest* is constituted by millions of *small* organisations that slowly have for decades been challenging oppressive Promethean endeavours. Hawken (2007:141-142) has likened these organisations to parts of an interconnected immune system: "the shared activity of hundreds of thousands of nonprofit organizations can be seen as humanity's immune response to toxins like political corruption, economic disease, and ecological degradation". Considering that permaculture is a universal but adaptable and context-bound⁴⁵⁵ approach that works to affect (and effect) small and slow systemic solutions that strengthen and spread over time, it plays an important role as a systemic platform from which the kind of Orphic endeavours spoken about by Hawken can take place.

6.6.10 Use and value diversity

This permaculture principle immediately resonates with the postmodern quality of heterogeneity, a synonym for diversity, as opposed to the homogeneity of modernity, the latter being the historical era in which the colonial endeavour to 'civilise' the world via the imposition of various aspects of one-dimensional ACID occurred (a process that has not ceased; the 2010 Soccer World Cup in South Africa arguably marked a major attempt to find a geographic foothold for the further economic colonisation of Africa via the globalising, and ultimately economically and culturally homogenising, strategies of Capitalism). Permaculture works to systematise diversity and thereby promotes cooperative, complex relationships between the diverse parts that constitute a system, as can be seen in the following example offered by Mollison (1988:26):

Existence is not only a matter of product yield, but a question of appreciating variety in landscape. Evolving plant systems and existing animals provide niches for new species: the cattle egret follows cattle; the burrows of rabbits are occupied by possum, bandicoot, snakes, frogs, and feral cats; and the growing tree becomes a trellis, shade spot, and a host to fungus and epiphytes.

The permaculture Association⁴⁵⁶ accordingly states that permaculture designs "should always try to incorporate a wide variety of plants, animals and approaches". It continues to explain the importance of diversity in a given system: diversity

is not just for the sake of it, but because diversity can act like an insurance policy - if one crop fails, another may succeed. Even within an orchard there will be a diversity of different varieties. Take apples as an example. A healthy diverse orchard will contain early flowering, late flowering, eaters, and cookers. If an early frost gets some, others will be popping out flowers later on. Polycultures (agricultural systems with many plants), are now proven to be more productive

⁴⁵⁵ What is meant by 'universal, adaptable and context-bound' is that it can be practiced anywhere, but every manifestation of a permaculture system will be different depending on the unique 'contextual' factors of an area, factors such as climate, slope of land, main purpose for which the system will be put to use, specific conservation concerns, budgets, etc. As such, it is a practice that respects, and confirms, the complexity of ecological systems, that is, their interwovenness, openness to both benign and deleterious change, and hence their unpredictability, given the (for humans) ultimately incomprehensibly complex interrelationships among natural phenomena, established in the course of millions of years of evolution.

⁴⁵⁶ <https://www.permaculture.org.uk/principle/10-use-and-value-diversity> accessed 25 February 2016

overall and resilient to weather, pests and other factors, than monocultures (agricultural systems with only one plant species.)

Speaking about the rules of necessitous⁴⁵⁷ and conservative use, which have already been encountered in this chapter, Mollison (1988:3) reinforces the view of the Permaculture Association when he indirectly makes some important points about the role of diversity in systems:

Consideration of these rules of necessitous and conservative use may lead us, step by step, to the basic realisation of our interconnectedness with nature; that we depend on good health in all systems for our survival. Thus, we widen the self-interested idea of human survival (on the basis of past famine and environmental disaster) to include the idea of ‘the survival of natural systems’, and can see, for example, that when we lose plant and animal species due to our actions, we lose many survival opportunities. Our fates are intertwined. This process, or something like it, is common to every group of people who evolve a general earthcare ethic.

The view that the fates of natural systems, of plant and animal species, and of human beings, are all intertwined in complex ways – this is indeed an explicit Orphic view and is often a primary motivating factor for permaculturalists and ecologists. By contrast, the practices of ACID, which impact negatively on ecosystems, change the relationships between living beings, with unpredictable consequences.

I have commented already on the aspects of my ‘permaculture journey’ where diversity was clearly prioritised: For example, the diversity of plants and trees that constitute the food gardens, the increase in biodiversity that accompanies such gardens, and other elements of the system such as the piles of wood that serve as walls to the homestead but also as homes to wildlife and as ‘fertility sponges’ that seep nutrients out for plants and trees, and finally the diverse energy-production means of the system, namely the rocket stove, parabolic solar cooker, coil of piping for heating of water by the sun, and compost toilet (the latter of which less obviously returns energy and fertility to the system).

The ‘unnamed movement’ described by Hawken in *Blessed Unrest* again is one that is immediately relevant when considering the principle of using and valuing diversity. The movement is one constituted by millions of diverse groups, all working on differing aspects of problems like “political corruption, economic disease, and ecological degradation” (Hawken 2007:141-142). Then, Eisenstein’s solution to the problems of a debt-based fiat currency is constituted by a diverse set of alternatives⁴⁵⁸: “1. negative-interest currency; 2. elimination of economic rents, and compensation for depletion of the commons; 3. internalisation of social and environmental costs; 4. economic and monetary localisation; 5. the social dividend; 6. economic degrowth; 7. gift-culture and P2P economics”. As in the case of a strong and resilient diverse ecological system of which human beings are simply one small part, social and economic systems (as focused on by Hawken and Eisenstein, but the focus can be expanded to political systems as well) can be strengthened immensely by diversification of that which constitutes them, and permaculture has much to offer in this regard.

457 Note that ‘necessitous’ does not denote ‘impoverished’ or ‘needy’ in permaculture; rather, it is used in the sense already defined in this chapter: “we leave any natural system alone until we are, of strict necessity, forced to use it”.

458 The different approaches are each extensively explored in earlier chapters of the book.

6.6.11 Use edges and value the marginal

In permaculture, edges are generally the places where two ecosystems meet; this is the definition provided by the Permaculture Association⁴⁵⁹, which elaborates on this principle as follows:

The place where two eco-systems or habitats meet (e.g. woodland and meadow) is generally more productive and richer in the variety of species⁴⁶⁰ present than either habitat on its own. In ecology this is called 'ecotone'. This is central to the idea of using edges as a design method. The logic is simple. If the most productive bit of woodland is the edge, then design it to have a bigger edge.

This logic is indeed simple, because the edge between two ecosystems is where species from one ecosystem encounter species from the other. The permaculture designer, in planning for 'more edge' in a given system, works to increase 'overlap' between ecosystems, thereby creating more biodiversity simply because more than one ecosystem is required for such overlap to occur – the more ecosystems that meet (i.e. more edges), the better. As has been detailed in Chapters 1 and 2, and frequently commented on thereafter in this study, industrial agriculture does exactly the opposite, i.e. it transforms biodiverse areas into what Mollison (quoted earlier) referred to as 'agricultural wastelands' of monocrops. This permaculture principle is therefore another method of righting the wrongs of Promethean agriculture.

In permaculture, prioritising edges may also mean a focus on less obvious cooperative relationships between species, and the corollary is that cooperative relationships make for healthy communities. These ideas are evidenced in the following from Mollison (1988:3); he begins his observations with the now familiar Orphic quality in permaculture of having a strong 'earthcare ethic':

Having developed an earthcare ethic by assessing our best course for survival, we then turn to our relationship with others. Here, we observe a general rule of nature: that cooperative associations of self-supporting species (like mycorrhiza on tree roots) make healthy communities. Such lessons lead us to a sensible resolve to cooperate and take support roles in society, to foster an interdependence which values the individual's contributions rather than forms of opposition or competition.

The relevance of the above observations to the principle of edges is this: one can consider the space between tree roots and soils as edges, albeit marginalised spaces when looking from an orthodox Promethean perspective – spaces 'occupied' by mycorrhiza that carry out important functions for the well-being of the plant, e.g. in assisting in nutrient exchange⁴⁶¹. The awareness of edges in this instance will directly impact upon the kind of actions that human beings undertake, for example, they will likely not dig into soils unless they absolutely have to because they know that disturbing soils damages mycorrhiza and other important microbacteria that work to create beneficial conditions for plants. Accordingly, permaculture is well known for its favouring of the 'no-dig' approach: as the name implies, soils are not dug into as a matter of priority. Instead, areas are 'lasagne mulched', which involves piling layers of alternating types of organic matter onto a given area that will later be planted in. It might take several months before these kinds of raised

459 <https://www.permaculture.org.uk/principle/11-use-edges-and-value-marginal> accessed 29 February 2016

460 This is a reiteration of Mollison's following comment (1988:76): "Animals are found in greater numbers on edges, for example, and a fire mosaic landscape is rich in species".

461 Mycorrhiza "networks can affect the physiology and ecology of plants by facilitating interplant nutrient exchange, acting as inoculum reservoirs for seedlings and altering plant competitive abilities." [http://www.cell.com/trends/ecology-evolution/abstract/S0169-5347\(06\)00212-](http://www.cell.com/trends/ecology-evolution/abstract/S0169-5347(06)00212-6)

6?_returnURL=http%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0169534706002126%3Fshowall%3Dtrue accessed 1 March 2016

garden/agricultural beds are ready to plant things in, but the added benefits of the method justify the wait: increased microbiological activity, long term fertility, increased moisture retention, and raised beds that can withstand seasonal flooding.

I have just mentioned the cooperation between different species, specifically the cooperation between mycorrhiza, microbacteria and plants. These different species could be thought of as individual smaller 'systems' that together constitute and affect a bigger system; i.e. 'micros' constituting the macro', where a change of a micro affects the macro as a whole. A permaculture system is constituted by many such smaller systems, some of which may seem 'marginal' or peripheral but which certainly play important parts in the larger system, and here there is some overlap with James Lovelock's Gaia theory (which has been confirmed independently by several scientists – see Lovelock 2010:105-122). The theory holds that "earth's atmosphere is actively maintained and regulated by life on the surface, that is, by the biosphere" (1979:9). Having quoted directly from the source, i.e. Lovelock, I feel it is safe to refer to the description of the Gaia hypothesis available at Wikipedia.com⁴⁶², which is a concise description:

The Gaia hypothesis, also known as the Gaia theory or the Gaia principle, proposes that organisms interact with their inorganic surroundings on Earth to form a synergistic self-regulating, complex system that helps to maintain and perpetuate the conditions for life on the planet.

Noteworthy is the use of the word 'interact', which features in a previously discussed permaculture principle, and stands out as an Orphic characteristic – the opposite Promethean quality would be 'dominate'.

Regarding the aspect of this principle that focuses on 'valuing the marginal', the Permaculture Association (Ibid) points out that marginal "could be ideas, views, unusual plants, wild animals or people at the 'edge' of society. Permaculture itself has been seen as marginal for many years". There is a link between the role of 'the marginal' in permaculture and Michel Foucault's work, specifically his work on the marginalised in society. As Gutting (2005:68) points out, on "one level, *Discipline and Punish* does for prisoners what *The History of Madness* did for the mad. It analyses our allegedly humanitarian treatment of a marginalized group..." (Gutting, G. 2005:68). Foucault did not only focus on prisoners and the mad, but also on marginalised groups in general. Here Gutting (2005:89), after drawing attention to Foucault's focus on 'wider' marginalised groups in society (i.e. not just the mad and the imprisoned), spells out the potential these groups have for societal change:

In contrast to the mad, the marginalized have values that can meaningfully challenge our own and needs that could be plausibly satisfied within our society. Their concerns can, therefore, be the focus of programmes for effective political action. Further, such programmes can be genuinely revolutionary without Utopian global ambitions. For us to authentically say 'we' with the mad would require demolishing our core values and institutions, but the claims of the marginal are based on critiques of specific features of our society that can be modified without total overthrow.

Just as the marginal can affect such changes in a social system, so too can mycorrhiza⁴⁶³ and microbacteria (which, it seems safe to say, are marginalised from the orthodox Promethean perspective) be considered and respected for the cooperative advantages they create in a biological

462 https://en.wikipedia.org/wiki/Gaia_hypothesis accessed 6 March 2017

463 Mycorrhiza were mentioned by Mollison in a quote that appeared earlier in this sub-section.

system, and this is true of ideas, views, unusual plants, wild animals and people at the edge of society – ‘things’ listed by the Permaculture Association (quoted above). This of course requires a very different kind of system to the one that in this study has been identified as characteristically Promethean and which has been called ACID; the alternative system would have to promote real diversity and difference, and incorporate that which is marginalised in ACID. ACID may *ostensibly* promote diversity and difference, as Hardt and Negri point out in *Empire* (2001:153-154), but in fact really only thrives on *apparent* diversity insofar as it serves profit⁴⁶⁴, the priority of Capitalism; it really promotes homogeneity, and Rosi Braidotti clearly agrees when she uses the phrase, the “homogenization of cultures under the effects of globalized advanced capitalism” (2013:49).

Permaculture – which, to repeat a part of the quote from the Permaculture Association, “has been seen as marginal for many years” – can be used to help construct an alternative system, just as the marginal in Foucault’s work can. I must add that all of the ‘alternative’, more Orphically-aligned, focal areas of Chapter 5 can be said to be marginalised in ACID; the implication being (after Gutting’s comments made in view of Foucault’s work) that they can play a role in social change.

I have put this permaculture principle into practice by piling organic matter (tree branches, leaves, occasional layers of horse manure) on the perimeter of the homestead area. This process was discussed in an earlier permaculture principle. These ‘woodpile walls’ that *are* the edges, the margins, of the homestead serve the important function of keeping dogs out of the area, of providing much-needed windbreaks for the gardens, of storing fertility for long term break-down and slow seepage of nutrients into surrounding areas, and of providing a habitat for various forms of life. And throughout the homestead one finds various non-linear rows of trees and garden beds and wood-stumps, the presence of which creates more useful margins where microclimates meet.

Regarding the relevance of this permaculture principle to the ‘Orphic offerings’ explored in Chapter 5: all of them can be said to currently exist on the periphery of mainstream discourse. None of the topics discussed in Chapter 5 fit as ‘components’ of ACID because their Orphic character opposes them to the dominant Promethean character of ACID. Yet just as the use of edges and valuing of the marginal add important features to a physical system, each area of focus in Chapter 5 can add an important dynamic into a consideration or analysis of a relevant topic given a theoretical approach to the topic. Theory often underlies practice (which reciprocally informs theory), so it follows that incorporation of ‘marginalised’ Orphic ideas into a line of thought can transform action that may have previously been dominantly Promethean. Good examples of this are two of the movements encountered in Chapter 5, the first being the ‘unnamed movement’ of *Blessed Unrest* consisting of between one and two million organisations, and the Occupy Movement: both of these movements are/were constituted by ‘margins’ of people who act as buffers – edges – between the entities that cause socio-political, economic and ecological injustice on the one hand, and the entities that are the victims of such injustice on the other hand.

464 See Chapter 3 of this study, sub-section 3.5

6.6.12 Creatively use and respond to change

Mollison (1988:11) aptly points out that in “life and in design, we must accept that *immutable rules will not apply*, and instead be prepared to be guided on our continuing exploration by *flexible principles and directives*” (his emphasis). The previous eleven permaculture principles are notably flexible: each one will be applied differently in a different context depending on the details of the given context. For example, a permaculture design for food gardens on a flat piece of land will be considerably different to a design for food gardens on a sloped piece of land; observation (principle one) will obviously produce different results; the catching and storing of energy (principle two) will not be the exactly the same; the yields (principle three) will also be different; and so on. In a nutshell, permaculture acknowledges and respects complexity.

Every season also brings about changes that affect all permaculture food systems. Summer yields are obviously different to winter yields, and the permaculturalist plants different seeds at different times of year, involves herself in different activities at different times of year (for example, working outside at the heat of the day during the summer in hot climates is not recommended), and tends to adapt her diet to one that can incorporate seasonal produce as far as is possible. The Permaculture Association⁴⁶⁵ uses the example of changing seasons as an opportunity to point out that such predictable changes can be planned for: “seasons of spring, summer, autumn and winter are predictable and can be planned for, and incorporated into our designs, management and action plans”. The Association elaborates on this broad notion of changing systems as follows:

How eco-systems change over time – in ecology this is called 'succession' [-] is also predictable, at least overall. By understanding how ecosystems change over time, we can accelerate the process and create productive ecosystems faster than is usual in nature. Forest gardens are an example of this, where all the layers of the forest are put in all in one go, rather than over many years.

The permaculture approach is therefore one that proactively anticipates change and plans for it via the design process. This proactive approach of planning for change is of importance considering broader socio-political, economic and ecological changes, some of which the Permaculture Association draws attention to: “Climate change, peak oil, resource depletion, population growth, technology changes, economic booms and busts, all contribute to a less than certain age”. The Association adds the following optimistic reassurance, which surely stems from experience with permaculture systems in general: “Many of these challenges seem beyond our control. However, the way we think about them, and how we react as individuals, groups, organisations and networks, is under our control”.

In ACID, the ‘Business-as-usual’ Promethean mindset prevails in the context of change: food production is ‘changed’ via the application of ever-increasing amounts of industrial chemicals to monocrops of ever-increasing size that require ever-increasing amounts of water to grow, process, and distribute; throughput of raw materials under the consumer-Capitalist model is ‘changed’ by increasing the throughput of raw materials and the ever-increasing rate of available consumer goods; the fractional reserve money industry ‘changes’ by the ever-increasing creation of ‘currency’ (which counterintuitively means increasing debt throughout society); political ‘change’ entails the (potential) change of one political party for another but all political parties ‘inherit the check-book’

465 <https://www.permaculture.org.uk/principle/12-creatively-use-and-respond-change> accessed 1 March 2016

(so to speak) and perpetuate the agenda of consumer-Capitalism; and so on (see Chapters 2 and 3 for details on the listed examples, and for various other examples). In other words, 'change' is synonymous with *growth* in ACID – which is to say that more of the same is occurring, which is not change. This ties back to what I have argued in the 'Introduction' section of this study: ACID 'does not do real change', in the dialectical sense of change. Permaculture, however, does embrace change, as explored in this sub-section. Moreover, the kind of growth, which in ACID replaces dialectical change, is a growth propelling the ecological crisis (see Chapters 1 and 2 for the exposition of this cause-and-effect relationship). Change in the context of permaculture, on the other hand, involves not only being aware and respectful of changing cycles, e.g. the seasons, but also being aware of the changes that human beings cause in a given environment in all its facets – social, political, economic, and ecological. Permaculture therefore acts as a mitigating force against the Promethean Business-as-usual 'growth mindset' characteristic of ACID.

I will add, in light of what has been written so far about this principle, that I was partly inspired to begin my 'permaculture homestead experiment' by a growing awareness that the 'Business-as-usual' mindset is instrumental in causing the ecological crisis. It was clear to me that real change of systems is necessary in order to start dealing with the ecological crisis, and for me this meant drastically changing the way I live – the rustic permaculture homestead that is my home (and which has been described in some detail in this chapter already) is testament to my embrace of change. In applying all of the permaculture principles already discussed, I changed my life, and my changed life has incomparably fewer negative ecological impacts than that of the average 'Promethean man'. Indeed, I make frequent positive ecological contributions by putting into practice the previously discussed permaculture principles. The way of life that I have undertaken involves constant planning for and adapting to change – specifically change of the seasons and the accompanying changes in temperature, rainfall, vegetables that must be planted, chores that need to be adapted, and so on. This way of life is ecologically-sensitive: putting on more clothes when cold in winter, as opposed to buying electric heaters to warm various rooms in a building; eating seasonal vegetables rather than eating vegetables flown in from various countries for the purpose of year-round availability of all types of vegetables; changing routine frequently to make compost when all the humanure buckets are full rather than flushing fertility down the toilet; and so on. No big societal/political/economic change needed to occur for me to make such personal changes; instead, I took heed of unambiguous information about the ecological crisis (Chapter 1), about the causes of the ecological crisis (Chapter 2), and I made the choice to change my life, as did my life-partner.

All of the Orphic offerings explored in Chapter 5 can be said to be very open to change: older cultures constantly adapted themselves to being more connected to seasons and natural cycles; the unnamed movement of *Blessed Unrest* is constituted by between one and two million groups that all work for *changes* towards socio-political, economic and ecological justice; Sheldrake's morphic resonance theory focuses partly on habits and *changes* that occur in a species via the morphic fields; Hancock's work on the legacy of a potentially lost civilisation of vast antiquity implies a crucial *change* to the way that human beings understand their origins; Eisenstein's *Sacred Economics*, the Occupy Movement, and the Zeitgeist movement all propose massive *changes* to the Promethean status quo of ACID.

6.7 Immediate Priorities

In planning for alternatives to Promethean endeavours characteristic of ACID, one may observe the following “practical design considerations” provided by Mollison (1988:15):

* The systems we construct should last as long as possible, and take least maintenance. * These systems, fuelled by the sun, should produce not only [for] their own needs, but the needs of the people creating or controlling them. Thus, they are sustainable, as they sustain both themselves and those who construct them. * We can use energy to construct these systems, providing that in their lifetime, they store or conserve more energy than we use to construct them or to maintain them.

These design considerations work alongside “a set of ethics on natural systems” (Mollison 1988:7), a set of ethics that is very clear on what human action entails in the context of the ecological crisis:

In a world where we are losing forests, species, and whole ecosystems, there are three concurrent and parallel responses to the environment: 1. Care for surviving natural assemblies, to leave the wilderness to heal itself. 2. Rehabilitate degraded or eroded land using complex pioneer species and long-term plant assemblies (trees, shrubs, ground covers). 3. Create our own complex living environment with as many species we can save, or have need for, from wherever on earth they may come.

This involves the following (Ibid):

* Implacable and uncompromising opposition to further disturbance of any remaining natural forests, where most species are still in balance; * Vigorous rehabilitation of degraded and damaged natural systems to stable states; * Establishment of plant systems for our own use on the *least* amount of land we can use for our existence; and * Establishment of plant and animal refuges for rare or threatened species.

Mollison (Ibid) points out that permaculture is mainly centred around the third of the above points, but adds that “all people who act responsibly in fact subscribe to the first and second statements”. He encourages people to “use all the species we need or can find to use in our own settlement designs, provided they are not locally rampant and invasive”. Furthermore, people are urged to become “truly responsible conservationists” (1988:7), which involves some very practical actions:

...truly responsible conservationists have gardens which support their food needs, and are working to reduce their own energy needs to a modest consumption, or to that which can be supplied by local wind, water, forest, or solar power resources. We can work on providing biomass for our essential energy needs on a household and regional scale.

Creating gardens indeed becomes a central activity, as again evident in the following (Ibid):

Even the smallest garden can reserve off a few square meters of insect, lizard, frog, or butterfly habitat, while larger gardens and farms can fence off forest and wetland areas of critical value to local species. Such areas should be *only* for the conservation of local species.

And amusingly in the following too (Mollison 1988:6):

People think I am slightly crazy when I tell them to go home and garden, or *not* to involve themselves in broadscale mechanised agriculture; but a little thought and reading will convince them that this is, in fact, the solution to many world problems.

Mollison identifies in the aforementioned quote something that people should not do, namely “involve themselves in broadscale mechanised agriculture”; he again (1988:9) points towards some examples of actions that should not occur in a context where sustainability is valued:

It is hypocrisy to pretend to save forests, yet to buy daily newspapers and packaged food; to preserve native plants, yet rely on agrochemical production for food; and to adopt a diet which calls for broadscale food production.

6.8 Some Criticisms of Permaculture

In the spirit of providing something of a less ‘biased’ view of permaculture – and obviously my several years of experience with permaculture and my ‘delving into’ its theory and practice places me in a ‘biased position’ – I have looked for criticisms of permaculture to include at this stage of the chapter. Perhaps interestingly, I have not been able to find published criticisms of permaculture. Conveniently, however, I did find a website⁴⁶⁶ where several criticisms of permaculture are listed. For the sake of brevity at the end of a long chapter, I will offer a condensed bullet-point list of some of the criticisms. Please note that I omit the ‘responses’ from ‘the permaculture perspective’ to the criticisms, as it is not my intention to become engaged with criticisms that are completely irrelevant to any aspect of my argument in the previous sub-sections of this chapter because I make none of the claims the following criticisms are levelled at; however, omitting any sense of criticism may come across as deliberately misleading, hence the following:

- John Robin has criticized permaculture for its potential to spread environmental weeds. For example, permaculture projects may introduce plants such as Mesquite, which is beneficial to farming in many ways but impossible to remove, and can grow out of control when mismanaged.
- Some critics have questioned the scientific data on which the claim of "higher productivity of more mature ecosystems" promoted by permaculture advocates are based.
- Some critics also claim that woods cannot be more highly productive than farmland, as ecological succession states that net productivity declines when forests mature.
- Although permaculture basic concepts [are grounded] in traditional scientific knowledge of ecology, critics have found it is often difficult to find scientifically tested data that validate certain claims promoted by permaculture advocates, and conclude that they neglect the scientific approach.
- Some other critics and practitioners identify permaculture with a set of spiritual, [ethical] and moral rules, and claim that permaculture is a system of belief and behaviour that has or needs no scientific justification.
- Finally, permaculture critics also [focus] on the lack of clarity and the scientific inexactitude of certain authors and teachers, especially when expressing themselves outside of their domain of expertise.

466 <http://permaground.wikispaces.com/Permaculture+Criticisms> accessed 11 October 2017

6.9 Conclusion to Chapter 6

The information provided in the chapter leaves no doubt that permaculture is explicitly and thoroughly Orphic in character; that is opposed to Promethean attitudes, endeavours and ideologies characteristic of ACID; that it is highly practical in nature while simultaneously founded upon firm ethical principles; and most importantly in the context of the ecological crisis, that permaculture strategies mitigate various issues that were explored in Chapters 1 and 2. As Mollison (1988:9) points out,

the result of the adoption of permaculture strategies in *any* country or region will be to dramatically reduce the area of the agricultural environment needed by the households and settlements of people, and to release much of the landscape for the sole use of wildlife and for re-occupation by endemic flora. Respect for all life forms is a basic, and in fact essential, ethic for all people.⁴⁶⁷

It is the remarkable 'down-to-earth' quality of permaculture that makes it so appealing in the context of the ecological crisis: permaculture "as a design system contains nothing new. It arranges what was always there in a different way, so that it works to conserve energy or to generate more energy than it consumes" (Mollison 1988:9). This simplicity can empower individuals to implement small changes in their own lives that add up gradually over time and that decrease reliance on the systems of ACID that largely cause the ecological crisis. No 'political will' is therefore needed to incite positive change towards ecological sustainability, nor enterprising initiatives from the corporate world, nor any of the other 'external' factors that people might be tempted to believe are necessary in mitigating against the ecological crisis. Perhaps such positive factors partly explain why anthropologists James R. Veteto and Joshua Lockyer, in their paper 'Environmental Anthropology Engaging Permaculture: Moving Theory and Practice Toward Sustainability', had the following extremely positive remark to make after conducting research into some aspects of the practical and theoretical realms of permaculture: "We suggest that an anthropological engagement with permaculture represents an especially timely opportunity for anthropologists to move toward sustainability in ways that complement and enable us to extend our traditional areas of theoretical and practical expertise". I suggest that this recommendation applies not only to the academic realm of anthropology, but to all arenas constituting the academic community. In further support of this recommendation, I will refer to the article entitled 'Feeding and healing the world: through regenerative agriculture and permaculture', by Christopher J. Rhodes. Despite admitting that "a proper scientific study, made in hand with actual development projects" is lacking (2012:345), Rhodes focuses on permaculture and regenerative agriculture and points out that "there is overwhelming evidence both that the methods work and they may offer the means to address a number of prevailing environmental challenges, e.g. peak oil, climate change, carbon capture, unsustainable agriculture and food shortages, peak phosphorus (phosphate), water shortages, environmental pollution, desert reclamation, and soil degradation" (Ibid). The contents of this chapter go a considerable way in supporting the contentions of these academics, and the attention given to permaculture by these academics surely strengthens the case to include permaculture in this academic study.

Finally, one can think of people who implement permaculture principles as 'philosopher gardeners' or 'farmer-poets' – these are appellations offered by Mollison (1988:9), ones that point towards the

⁴⁶⁷ This ethic is clearly compatible with Buddhist philosophy, in which respect for all life forms is also of central importance.

mix of theory and practice that constitutes permaculture. Employing these suggestive appellations, Mollison (Ibid) offers positive and thought-provoking sentiments that will conclude this chapter:

Philosopher-gardeners, or farmer-poets, are distinguished by their sense of wonder and real feeling for the environment. When religions cease to obliterate trees in order to build temples or human artefacts, and instead generalise love and respect to all living systems as a witness to the potential of creation, they too will join the many of us now deeply appreciating the complexity and self-sustaining properties of natural systems, from whole universes to simple molecules. Gardener, scientist, philosopher, poet, and adherent of religions all can aspire in admiration of, and reverence for, this earth. We create our own life conditions, and for the future.

Chapter 7:

What is the role of philosophy in view of the context established so far?

7.1.1 Introduction

As was seen in Chapter 1, it is indisputable that something is happening that can be called an ecological crisis – as Foster, Clark and York comment (2010:155):

It is impossible to exaggerate the environmental problem facing humanity in the twenty-first century. Available evidence now strongly suggests that, under a regime of ‘business as usual’ with no substantial lessening of the drivers of environmental destruction, we could be facing within a decade or so a major ‘tipping point,’ leading to irrevocable and catastrophic climate change. Other ecological crises — such as species extinction, the rapid depletion of the oceans’ bounty, desertification, deforestation, air pollution, water shortages and pollution, soil degradation, the imminent peaking of world oil production (creating new geopolitical tensions), and a chronic world food crisis – all point to the fact that the planet as we know it and its ecosystems are stretched to the breaking point. The moment of truth for the earth and human civilization has arrived.

That human industries have caused and continue to cause the vast ecological destruction associated directly with the ecological crisis is also indisputable – this was shown in Chapter 2. Specific historically-dominant attitudes have directed human actions towards ecologically-destructive ends – some aspects of these Promethean attitudes were looked at in Chapter 3. Additionally, various ‘mechanisms’ perpetuate ecologically-destructive actions – some were explored in Chapter 4. Alternative, Orphic ideas and attitudes propelling ecologically-sensitive actions are available – some of these ideas were focused on in Chapter 5. Permaculture offers twelve principles that, when used together as a framework for human endeavours, promote tangible Orphic and ecologically-sustainable outcomes – this was explored in Chapter 6.

Philosophy has appeared at various stages from Chapter 3 onwards. I say this in the sense that philosophers’ ideas have been encountered at various stages of Chapters 3, 4 and 5, and to a far lesser extent in Chapters 1 and 2. Beyond the contributions from various philosophers in previous chapters, however, what else does philosophy broadly ‘have to offer’ in the context of the focal areas of the different chapters? In reading various works of philosophy, and in reading the work of various philosophers, as well as in reading *about* philosophy, I have encountered ideas that have stood out amongst others as particularly useful considering the question I have just asked.

After considering the progression of topics and themes in Chapters 1 to 6, one might expect in this chapter something of a ‘philosophical justification’ for choosing to give Orphic ideas more prevalence, first, in one’s own life and, second, in the broader socio-political and economic context(s) that determine(s) so much of how people position themselves conceptually and physically in relation to their environments. One might even expect a ‘philosophical argument’ geared towards prioritising the spread of permaculture principles and practices in the context(s) I just mentioned. Indeed, it can be argued that ‘talk is cheap’ when it comes to the ecological crisis, that consideration of Orphic ideas *motivates* one to ‘tread softly’ in her environment, and that application of permaculture principles facilitates a tangible and sustainable *interaction* between the human and

non-human arenas. However, such a process – of ‘philosophical justification’, and/or of ‘philosophical argument’ – would be highly problematic because the research I have conducted into the broad arena of philosophy – into the questions of *what is philosophy* and *how is philosophy relevant in these broad contexts?* – has revealed the role of philosophy to be divorced, so to speak, from the socio-political, economic, and now ecological ‘positions’ that philosophers (and non-philosophers) may occupy; my meaning here may be somewhat unclear at this early stage of the chapter, but I will gradually offer clarity in this regard.

My research into the role of philosophy in the context of the ecological crisis often uncovered philosophers, academics, environmentalists, ‘eco-philosophers’, and other commentators, who offered outstanding critiques of the causes of the ecological crisis, the industries that directly cause the environmental impacts, the attitudes and ideologies that have resulted in the crisis and continue to propel it, the perpetuation mechanisms of the crisis, and alternative ideas that challenge the attitudes and ideologies behind the crisis. Chapters 1 to 5 of this study together constitute a compilation of that research, while Chapter 6 constitutes a review of permaculture in light of the first five chapters, with ‘my academic contribution’ thus far being to link themes, ideas, issues, and ‘positions’ from one area of research to some of the other areas. However, occasionally during the research process I encountered texts that delved more broadly into the issue – the question – of what philosophy is, and what its role is. And often I found myself reflecting on the content of Chapters 1 to 6 alongside what I was reading about philosophy and its role, and realising that there is something very relevant about the latter (philosophy in its broad sense) to the former (the content of Chapters 1 to 6), even if the latter was not explicitly commenting on the role of philosophy *in the context of the ecological crisis*.

The first text ‘on philosophy’ that stood out to me as most worthy of consideration in light of some of the broad issues brought forward during Chapters 1 to 6 is called *Philosophy in the Present* (2009), in which an ‘exchange’ occurs between Alain Badiou and Slavoj Žižek surrounding the question: what is the role of philosophy in the present? Their answers to the issue/question of the role of philosophy seem to me to be indispensable in the context of the ecological crisis for reasons I will explore in the first half of this chapter. Also important to note, in justification of the use of this text at this stage of this study, is that it is the most recent publication (2005 in French, and translated into English for a 2009 publication) ‘on philosophy’ or ‘about philosophy’ I consulted during research for this study, and it cogently presents the theory ‘on philosophy’ by two very prominent, well-known contemporary philosophers – as such it stands out as being an intriguing text to consider, and in relation to which some broad issues of this study can be contemplated. It needs to be noted here that my purpose is not to pursue what could possibly be termed the Promethean character of Badiou and Žižek’s respective politics; it is primarily to explore the value of their thought in the broad context established so far in this study. Indeed, focusing on the implications of their political positions, and related to this, the personal political views of either philosopher, to the exclusion of unrelated (but in the present context highly relevant) aspects of their thought due to judgments made in lieu of their political views, would be an instance of *ad hominem* reasoning, a fallacy worth avoiding for obvious reasons.

The other text ‘on philosophy’ that stood out to me, especially when considering how the role of philosophy is relevant in the context of the ecological crisis, is Pierre Hadot’s *Philosophy as a way of life* (1995). The title of the book is also the title of the final chapter of the book, which is of most

interest to me considering the important implications that potentially arise in consequence of an examination (which I will conduct) of the ideas presented in the chapter, which can then be used in reflection on some of the issues surrounding the ecological crisis as I have presented them in this study. Some important concepts from the penultimate chapter of the book *Philosophy as a way of life*, 'The Sage and the World', will also feature.

Additionally, I have found it to be the case that many colleagues and mentors in the philosophical quarters of academia are familiar with Hadot's text and the ideas it contains; however, I have encountered no colleagues or mentors who are familiar with the ideas (regarding the role of philosophy) outlined by Badiou and Žižek in their relatively short discussion offered in *Philosophy in the Present*. My aim is therefore *first* to conduct a summary of Badiou and Žižek's ideas about the role of philosophy, apply them in reflection to relevant content of Chapters 1 to 6 of this study, and *thereafter* to conduct the same process for Hadot's ideas about the role of philosophy. This chronology will allow me to summarise and apply Hadot's ideas to aspects of Chapters 1 to 6 of this study in a manner whereby I can incorporate relevant ideas already encountered in summary and application of Badiou and Žižek's ideas, thereby presenting Hadot's 'older', more familiar ideas in a 'fresher' manner via 'support' (where or if relevant) from Žižek and Badiou.

Please note that, structurally in this chapter, sub-sections 7.2.1.1 to 7.2.1.4 together constitute an outline of concepts and theory as presented by Badiou and Žižek, and that in these sub-sections I deliberately do not do anything more than outline the concepts and the theory. I will refer back to the concepts and theory in the sub-sections numbered 7.2.2.1 to 7.2.2.12. A slightly different structural approach will be taken for the exploration of Hadot's work. Here, in eight sub-sections, specifically 7.3.1.1 to 7.3.1.8, I will explore themes raised by Hadot and systematically use them to comment on various relevant points of consideration arising from previous aspects of this study.

The outline of the main ideas I have collated from Badiou and Žižek's *Philosophy in the Present* now follows.

7.2.1.1 The philosopher's 'personal views' versus philosophy itself

Both Badiou and Žižek clearly differentiate between the specific views that a philosopher may hold, and philosophy as they define it. Badiou (2009:1) speaks of "the philosopher [who] can speak about everything", "exemplified by the TV philosopher: he talks about society's problems, the problems of the present" (Ibid). Žižek (2009:51) humorously concurs when he offers the following scenario: "You're sitting in a café and someone challenges you: 'Come on, let's discuss that in depth!' The philosopher will immediately say, 'I'm sorry, I must leave', and will make sure he disappears as quickly as possible." Žižek's comments need not be taken literally, in the sense that a philosopher would physically 'remove herself' when asked to discuss a particular subject in depth. Instead, his remark can be taken figuratively: it highlights an aspect of the role of philosophy absent when opinions about 'particulars' or 'particularities'⁴⁶⁸ are expressed. As Žižek points out, philosophers are expected "to become engaged in the ... public sphere and so forth" (2009:50), but "often all one wants in truth is that we introduce ourselves. Our knowledge is then a type of vague reference that

⁴⁶⁸ I will use these terms interchangeably; more on particulars later.

gives authority to our opinions” (2009:67). These opinions may then get shared with members of a group having a conversation or dialogue, a dialogue in which different *but commensurable* opinions emerge – but Žižek explicitly says that philosophy is *not* a dialogue (2009:50). Indeed, as I will outline below, philosophy (according to Badiou and Žižek) ‘occurs’ when *incommensurability* is brought to light. This corresponds to Heidegger’s characterisation, in *Being and Time*⁴⁶⁹ (1996:157-158), of everydayness in terms of *ambiguity*, *idle talk* and *curiosity*, where people say things that may, on the face of it, seem contradictory, but yet merge together smoothly as if nothing anyone says disagrees with anything else – i.e. everything is ‘commensurable’⁴⁷⁰:

[W]hat is talked about is understood, only approximately and superficially. One means *the same thing* because it is in the *same* averageness that we have a common understanding of what is said. Hearing and understanding have attached themselves beforehand to what is spoken about as such. Communication does not ‘impart’ the primary relation of being to the being spoken about, but being-with-one-another takes place in talking with one another and in heeding what is spoken about. What is important to it is that one speaks.

So then, what is philosophy according to Badiou and Žižek? I will refer first to Badiou’s initial ‘philosophical characteristics’, all of which reiterate the point that philosophy is encountered in the creation or elucidation of *problems*:

- “The philosopher constructs his own problems, he is an inventor of problems’ (2009:1)
- “A genuine philosopher is someone who decides on his own account what the important problems are, someone who proposes new problems for everyone (2009:2)
- “Philosophy is first and foremost this: the invention of new problems” (Ibid)
- The philosopher “intervenes when in the situation – whether historical, political, artistic, amorous, scientific... – there are things that appear to him as signs, signs that it is necessary to invent a new problem” (Ibid).

Žižek is in agreement with Badiou (2009:69) and adds that the philosopher’s role is not simply to participate in a debate, but primarily to “change the concepts of the debate” (2009:51). This corresponds to what Deleuze and Guattari argue in *What is Philosophy?* (1994:5) – for them philosophy is the creation of new concepts: “philosophy is the discipline that involves *creating* concepts”. This role entails a move away from ‘alternatives’ that together form a mere disjunctive synthesis (a concept Žižek attributes to Deleuze) – “a play of differences that do not make a difference, or of choices that have no consequence or significance”⁴⁷¹ – a move away from “mutually complementary positions” (Žižek 2009:53). So again philosophy is initially presented as something emerging when faced with the incommensurable, and in this manner and in the philosophical context only beginning to be established, philosophy seems aligned with Jean-François Lyotard’s concept of ‘the differend’: “A differend is a case of conflict between parties that cannot be equitably resolved for lack of a rule of judgement applicable to both. In the case of a differend, the parties cannot agree on a rule or criterion by which their dispute might be decided”⁴⁷². Žižek accordingly associates philosophy with ‘the foreign’; or to coin a phrase, philosophy is a process of

469 First published in 1953.

470 Curiously, it also highlights something shared by philosophy and psychoanalysis; it seems no accident that both Badiou and Žižek are Lacanians!

471 <http://www.shaviro.com/Blog/?p=646> accessed 13 September 2016

472 <http://www.iep.utm.edu/lyotard/> accessed 5 October 2016.

'foreign-ising' [(What Karsten Harries calls 'dislocation'⁴⁷³, or Brecht, referring to drama, calls 'alienation', (Willet 1964:9)]. In further agreement with Badiou, Žižek states that what "interests me in philosophy above all is that moment of foreignness to which you [i.e. Badiou] refer" (2009:70):

This moment of foreignness that emerges through displacement; that philosophy... was from the very beginning not the discourse of those who feel the certainty of being at home. It always required a minimum of breakdown of the organic society. Ever since Socrates we always meet over and again this otherness, these holes... [...] That is in my opinion the zero point of philosophy. Every philosopher adopts this place of displacement.

To repeat, philosophy 'foreign-ises', or displaces. Žižek's focus on foreignness echoes that of Badiou established much earlier in the book (2009:24): Genuine philosophical commitments, says Badiou, create

a foreignness. In a general sense, it is foreign. And when it is simply commonplace, when it does not possess this foreignness, when it is not immersed in this paradox [of incommensurability], then it is a political commitment, an ideological commitment, the commitment of a citizen, but it is not necessarily a philosophical commitment. Philosophical commitment is marked by its internal foreignness.

Badiou, after his initial comments on the role of the philosopher, asks, "[O]n what conditions does the philosopher find, in the situation, the signs for a new problem, for a new thought?" (2009:2), and continues by offering three "examples of philosophical situations" (2009:3); I will now summarise them for later application to earlier aspects of this study.

7.2.1.2 Badiou: what is a situation for philosophical thought?

In order to illustrate what he means by a 'philosophical situation', Badiou turns first towards Plato's dialogue *Gorgias*, thereafter the circumstances surrounding the death of the Greek mathematician Archimedes, and finally a Japanese film entitled *The Crucified Lovers*. I will here briefly summarise Badiou's commentary on these texts.

Badiou (2009:3) points out that in Plato's dialogue *Gorgias*, "the thought of Socrates and the thought of Callicles share no common measure, they are totally foreign to one another". This is because in the dialogue, Socrates advocates Justice (in the philosophical sense) as the basis for happiness, while Callicles advocates personal tyranny (via might, cunningness, and violence) as the basis for happiness. Elaborating on these two extremes, Badiou (2009:4) comments that between these two mutually exclusive positions – "justice as violence" versus "justice as thought" – "there is no simple opposition, of the kind that could be dealt with by means of arguments covered by a common norm. In light of this example, Badiou (2009:5) explains further that the "sole task of philosophy is to show that we must choose":

In this example, philosophy confronts thinking as a choice, thinking as a decision. Its proper task is to elucidate choice. So that we can say the following: a philosophical situation consists in the moment when a choice is elucidated.

473 <https://campuspress.yale.edu/karstenharries/files/2016/01/Heidegger-Wittgenstein-and-the-Future-of-Philosophy-1s1lh0.pdf> accessed 3 March 2017

Badiou's second illustration of a philosophical situation (2009:6) is the death of Archimedes: quite simply, a Roman soldier (under orders from General Marcellus to escort the mathematician to the General) strikes Archimedes down for refusing to be distracted from a mathematical calculation he is conducting. The actions of the soldier show that he is of the view that one *must* listen to authority and follow orders without question or delay, and when Archimedes first ignores the soldier, and then says, "Let me finish my demonstration", the soldier kills Archimedes. Keeping in mind that General Marcellus and his orders, as well as the soldier conveying the message, can be said to represent 'the State', while Archimedes can be said to represent 'creative thought', Badiou (2009:9) comments on this situation as follows: it shows that "between the right of the state and creative thought, especially the pure ontological thought embodied in mathematics, there is no common measure, no real discussion". Furthermore, Badiou (2009:8) states that between

power and truths there is a distance: the distance between Marcellus and Archimedes. A distance which the courier [i.e. the soldier] ... does not manage to cross. Philosophy's mission here is to shed light on this distance.

The third example is the Japanese film, *The Crucified Lovers*, a film mainly about two lovers – a man and a woman – fleeing persecution due to the 'adulterous' woman being married and adultery being illegal and punishable by death in the context of the film. The lovers get caught by the authorities, and at the end of the film they are depicted being led to their execution. Badiou's interest here is this final scene – the philosophical situation as he identifies it – where the lovers, tied back-to-back on a mule, "seem enraptured, but devoid of pathos: on their faces is simply the hint of a smile, a kind of withdrawal into the smile" (Badiou 2009:10). Badiou (2009:11) concentrates on the look on the lovers' faces – the 'smile', a word Badiou admits he uses for lack of a better one – and comments that in the 'smile'

we once again encounter something incommensurable, a relation without a relation. Between the event of love (the turning upside down of existence) and the ordinary rules of life (the laws of the city, the laws of marriage) there is no common measure. What will philosophy tell us then? It will tell us that 'we must think the event'. We must think the exception. We must know what we have to say about what is not ordinary. We must think the transformation of life.

Finally in this sub-section, here is 'Badiou on philosophy' twice more. In the first quote (2009:16), the final sentence is a succinct summary of the characteristics of what Badiou considers to be a philosophical situation, while the first and second sentences begin to allude to the universal nature of philosophy, which will be expounded in sub-section 7.2.1.4:

I insist on this point: it is not because there is 'something' that there is philosophy. Philosophy is not at all a reflection on anything whatsoever. There is philosophy, and there can be philosophy, because there are paradoxical relations, because there are breaks, decisions, distances, events.

The final comments from Badiou to be quoted here demarcate what he calls genuine "philosophical commitment" (2009:23):

Genuine philosophical commitment – the kind which is immersed in the incommensurable and summons the choice of thought, staging the exceptions, creating distances and, especially, distancing from forms of power – is often a strange commitment.

The above outline of Badiou's conception of the characteristics of the philosophical situation will be used soon in general reflection on some of the themes, issues and concepts encountered during Chapters 1 to 6 of this study.

7.2.1.3 Žižek: philosophy as the creation of new problems – the biogenetics example

Žižek (2009:60-63) offers an interesting example of (as well as some interesting comments on) a “real philosophical question” (2009:61), a real philosophical problem. He raises the question – which I will soon quote – in response to the issue of biogenetics. Biogenetics, explains Žižek, is presented by “Spain’s official state philosopher” (2009:59), Habermas, in the following ‘neo-Kantian’ (2009:60) manner: in the sciences

you can do whatever you want; remember, however, that we are dealing only with the narrow field of cognitive phenomena. The human as autonomously acting moral subject is something else, and this field must be defended from every threat.

Accordingly, says Žižek, *pseudo-problems* (Ibid) emerge: “how far are we allowed to go into biogenetics? Does biogenetics threaten our freedom and autonomy?” Žižek identifies these as being false philosophical questions. Instead, he identifies the following as the “only real philosophical question” with regard to biogenetics: “is there something in the results of biogenetics that would force us to redefine what we understand by human nature, by the human way of being?” In criticism of Habermas, Žižek (2009:61) states that Habermas’s entire “intervention betrays the fear that something could fundamentally change, that a new dimension of the ‘human’ could emerge and the old idea of human dignity and autonomy would not be safely conserved”. This links perfectly to what Žižek (2009:60) says about the dubiousness of ‘state philosophy’:

What is the chief function of state philosophy in the contemporary dynamic capitalist society? It should endorse the development, indispensable for capitalism, of new sciences, of technology and business, while at the same time, however, it should obstruct their radical ethical and social consequences.⁴⁷⁴

From these statements, it is clear that the questions, “how far are we allowed to go into biogenetics? Does biogenetics threaten our freedom and autonomy?” – questions Žižek identified as *pseudo-problems* – are not the questions/problems pertaining to the real radical ethical and social consequences, in this case regarding biogenetics. The real questions according to Žižek, as already seen, pertain to the ‘redefinition of human nature’, to the emergence of a ‘new dimension of the human’, and also to the process whereby ‘something fundamentally changes’ – in other words, in a real instance of the dialectical process (see my comments on this in the introduction to this study). The latter process can be expressed differently: the *universal* process whereby the present contingent *particularities* of the human sphere change – which leads me to Badiou and Žižek’s interest in philosophy’s ‘universal focus’. I will now begin to address this focus, and then refer back to the example of biogenetics for further clarification.

7.2.1.4 Philosophy: cutting through particulars to reach the universal

An important aspect of philosophy that Badiou comments on extensively is its universal focus, something Žižek focuses on to a lesser degree. Badiou goes as far as outlining his theory of universality in *Philosophy in the Present* in eight theses (2009:26-48) – none of which I will directly incorporate into this sub-section, because the primary points made by Badiou and Žižek about

474 I must point out here that Science, Technology and ‘Business’ (i.e. Capitalist activity) are three of the four dominant shapers of discourse focused on in Chapter 3 of this study, which is to say that they are the historically dominant ideologies that underlie the ecological crisis, as shown in Chapter 3.

philosophy and universality on which I will focus are found in the final quarter of the book where the particular/universal topic is succinctly commented upon. I will take as the starting point here Žižek's affirmation (2009:72) of what he calls "Kant's idea", the idea that

[w]e as intellectuals should engage in the position of the singular universal; thus, a singularity that immediately participates in universality, since it breaks through the idea of a particular order. You can be human immediately, without first being German, French, English, etc. ... The fundamental message of philosophy... says that you can immediately participate in universality, beyond particular identifications.⁴⁷⁵

The apparent distinction between particularities and the universal is an important distinction, further grounded in light of other observations by Žižek and Badiou. For example, Badiou (2005:76) employs the idea of 'the inhuman' – something that I will soon show to resonate with universality – by way of a question⁴⁷⁶:

Is man destined to finitude, including the finitude of humanity itself, of humanity as a finite humanity, or is there instead a capacity for the infinite, that is a capacity for the inhuman which is ultimately what philosophy is concerned with?

Žižek (2009:85) later defines 'the inhuman' in the following phrase: "...the inhuman as a space for redefinition", and redefinition implies a break from any kind of stagnant particularity. Sharpening the distinction between particularities and universality, Badiou (2009:73) again uses the notion of the inhuman resonantly with the notion of universality when he contrasts the inhuman with particularities of 'human nature':

...philosophy really needs to be able to grasp that in truths, in new problems, there is something which is irreducible to any preconceived idea of human nature. I think this is very important: there is something inhuman in what the philosopher deals with.

'Preconceived ideas of human nature' are examples of particulars or particularities – a reminder here that I shall use these two terms interchangeably. The inhuman can be understood as that which lies beyond the scope of the particular notions that a given dispensation endorses (implicitly or explicitly) as the 'proper' definition of what it means to be human. The universal (or universality) can be understood in this light, i.e. it is that which lies beyond *particular* human preconceptions, something that will 'always' and 'infinitely' lie beyond human particularities, and as such the universal is 'inhuman'. But this is not to say that universality is inaccessible to human beings, as suggested by the opening focus of this sub-section, i.e. the Kantian notion of the singular universal, which (as already quoted) Žižek affirmed as a central, focal point for philosophy .

Badiou (2009:74-75) makes another association between universality and 'the inhuman', versus the particularity of 'historically constituted humanity':

...philosophy has been faced with the inhuman, and... it is there that its vocation lies. Each time that philosophy confines itself to humanity as it has been historically constituted and defined, it diminishes itself, and in the end suppresses itself. It suppresses itself because its only use becomes that of conserving, spreading and consolidating the established model of humanity.

475 Regarding the difference between 'singularity' and 'particularity': here, too, philosophy and Freudian psychoanalysis are on the same terrain – every subject has a 'singular desire', not shared by any other; this is universally true of all subjects.

476 Note that the concept of the 'inhuman' is used here in a different, but related sense to the way it is employed by Lyotard in the book by that name.

These observations by Badiou paint philosophy in something of a ‘revolutionary’ light – philosophy is clearly *not* something that occurs when the status quo, or ‘humanity as it has been historically constituted and defined’, is perpetuated. And again here one is confronted with an explicit distinction, a dichotomy, between particulars (i.e. humanity as it has been historically constituted and defined) and ‘the inhuman’, where the inhuman is again used synonymously with ‘the universal’. Indeed, Badiou clearly conveys the apparent revolutionary role of philosophy when he states explicitly that philosophy “suppresses itself” when it conserves, spreads and consolidates “the established model of humanity”. These are all important points that I will incorporate into the following sub-sections, which together constitute an application of various concepts, ideas and theory so far collated in sub-sections 7.2.1.1 to 7.2.1.4.

7.2.2.1 Philosophy is not a dialogue: Incommensurability, mutual exclusivity, and paradoxical relations

The notion that philosophy is not a dialogue appeared early on in sub-section 7.2.1.1. For a dialogue to occur, there must be something commensurable between interlocutors. However, Žižek and Badiou point to incommensurability as the realm of philosophy (a concept developed in relation to various other concepts explored throughout sub-sections 7.2.1.1 to 7.2.1.4). Between Socrates and Calicles, between Archimedes and the soldier of General Marcellus, between the crucified lovers and the state, dialogue is not possible, which is to say that their positions are incommensurable, and which is also to say that there is no common measure between the interlocutors. Consider now the incommensurability of the dominant Promethean and extensively Orphic paradigms. This incommensurability is suggested by Hadot (2006:98) in *The Veil of Isis*, which I referred to earlier in this study:

The Orphic attitude and the Promethean attitude may very well succeed each other or coexist or even combine. They nevertheless remain radically and fundamentally opposed.

Hadot’s use of the word ‘coexist’ may seem to suggest a potential for dialogue, until one recognises that (to use only one of Badiou’s examples) Socrates and Calicles also coexisted, but their positions remained incommensurable. Hadot’s suggestion, that the Promethean attitude and Orphic attitude could ‘combine’, offers more potential in the realm of commensurability, until one recognises that such a combination would entail something other than the original positions that were incommensurable to begin with: if the dominant Promethean attitude⁴⁷⁷ were to adopt Orphic qualities, it would no longer be dominantly Promethean; and if the strictly Orphic were to adopt Promethean qualities, it would no longer be strictly Orphic. I am not suggesting that combinations of the two have not occurred⁴⁷⁸. What I will argue, however, is the following:

Historically, a Promethean attitude has dominated the world (see Chapter 3, and sub-section 7.2.2.10 of this chapter), and this attitude has been inherently hostile towards nature for centuries:

477 ... epitomised by the historically-dominant forms of a) Christianity, proponents of which insisted that ‘man’ has dominion over nature, b) reductionist Science, proponents of which ‘torture’ nature for her secrets, c) applied Technology that serves only to process the ‘standing reserve’ of nature’s resources into consumable goods for the benefit of human beings, d) Capitalism’s inherent ‘grow-or-die’ drive, and e) ‘open’ Democracies that have been infiltrated by the ‘closed’ system of Capitalism. See Chapter 3 for detailed explorations of the first four historically-dominant shapers of discourse, and Chapter 4 for my exploration of ‘Democracy in a free-market neoliberal Capitalist system’ (sub-section 4.3).

478 One could argue that Al Gore’s position (as expressed in his most recent documentary, ‘An Inconvenient Sequel’) represents one such combination.

first under the captaincy of Christianity, then reductionist Science, then Promethean Technology, then Capitalism – all four of these shapers of discourse were shown in Chapter 3 to be aggressively Promethean in character *as they have unfolded historically*. The Orphic attitude, on the other hand, has never dominated (in the sense of ‘having dominion over’) any aspect of Western history as far as I have been able to ascertain, which is unsurprising because it seems *logically impossible* for the Orphic to dominate due to domination of any kind being necessarily un-Orphic; *to dominate* is a verb associated with The Promethean. So ultimately one is here left with an insurmountable incommensurability of the Orphic and the Promethean: the ‘strictly’ Promethean dominates, conquers, controls, competes, and expands aggressively, while the strictly Orphic can do none of these things⁴⁷⁹ – these are two strictly incommensurable platforms.

Notice here that the incommensurability between the Promethean and the Orphic arises from qualities of the Promethean – domination, conquering, control, competition, and expansion – that actively negate that which it encounters. Orphic qualities, on the other hand, are characteristics like tolerance, cooperation, interconnectedness, respect for difference, and balance. The incommensurability therefore does not arise because of an impasse inserted into ‘the equation’ by the Orphic; rather, the Promethean has the impact of marginalising all that is not commensurable within its own framework (see Chapter 4). Certainly, if one lists the qualities of the Orphic against the qualities of the Promethean, one would notice an explicit contrast where incommensurability is unavoidable – neither proponents of Promethean paradigms nor Orphic paradigms would be able to accept basic premises of each others’ paradigms. That said, the proponent of the Orphic paradigm is unlikely to engage in activities that negate the ecological platform necessary for life to exist – instead, as said, the proponent of the Orphic *interacts* with nature⁴⁸⁰ and with fellow human beings, working towards a ‘harmonious’⁴⁸¹ balance. On the other hand, the proponent of a Promethean attitude does actively negate that which is different to it, that which it relegates to a rung lower down the ladder of life than human beings (because another Promethean characteristic is rigid anthropocentrism). Little wonder that Promethean paradigms did historically rise to power (see Chapter 3), eliminating that which it encountered in the names of Christian dominion, Scientific reductionism and mechanistic materialism (via the ‘torture’ of nature, to reference Francis Bacon – see Chapter 3), Technological processing of nature for anthropocentric edification, and Capitalist consumer growth. The characteristics of the Orphic stand in stark contrast to the anthropocentric ones of the Promethean, which leads me to suggest that the Orphic would fit into what is today called ‘the posthuman’, or ‘posthumanism’, specifically with regard to that aspect of the posthuman which Braidotti (2013:60) discusses in the context of *post-anthropocentrism*: “Post-anthropocentrism is marked by the emergence of ‘the politics of life itself’ [...]. ‘Life’, far from being codified as the exclusive property or the unalienable right of one species, the human, over all others or of being sacralized as a pre-established given, is posited as process, interactive and open-ended”. This reinforces the idea that the Promethean attitude (which does ‘codify’ life as being “the exclusive property... of one species” (Ibid) is incommensurable with the Orphic attitude (which respects the inherent value of interactive and open-ended processes constituting life).

479 ...though perhaps it could become ‘pervasive’, manifesting in a variety of ways of thinking and living, which seems appropriate considering the qualities of the Orphic as so far explored in this study.

480 As in the case of, for example, permaculture principle number 1, namely ‘observe and interact’.

481 I employ ‘scare quotes’ around the word ‘harmonious’ in light of the Darwinian evolutionary position that natural ‘harmony’ in nature is marked by ‘the struggle to survive’.

I have occasionally encountered people who argue that even the most ruthless Capitalist accepts that ‘sustainability’ is necessary for Capitalist ventures to be possible, and that this is the ‘common measure’ that creates dialogue between (for example) ‘environmentalists’ and Capitalists; and further to this, that ‘sustainability’ is incorporated into Capitalist ventures, for example, when businesses ‘go green’ and add solar panels and power-saving light bulbs to their physical premises. However, a little exploration of the use of the word ‘sustainability’ in the different contexts of the Orphic and the Promethean again highlights their incommensurability. In the Orphic context, sustainability denotes something *completely different* to that which is denoted in the Promethean context. Sustainability in the Orphic context requires a complete (if gradual) alteration of ACID (See Chapter 5), based on the understanding that ACID’s Business-as-usual *modus operandi* is *inherently* unsustainable and premised on Promethean qualities inherently hostile to the complex inter-relationships that constitute nature (see Chapter 3). Sustainability in the Promethean context denotes a continuation of ACID’s Business-as-usual *modus operandi*, i.e. endless growth in the name of continuing profits and increasing GDP (see Chapter 3). The adoption of a strictly Orphic approach to sustainability therefore excludes the possibility of adopting a strictly Promethean view of sustainability and vice versa.

What then is the role of philosophy considering what I have said about incommensurability, about the impossibility of a proper dialogue between ‘strict’ Orphic attitudes versus ‘strict’ Promethean ones? Clearly, if one considers what has been summarised of Žižek and Badiou’s positions on this matter (they speak about incommensurability often) during sections 7.2.1.1 to 7.2.1.4, one aspect of the role of philosophy is, quite simply, to highlight the occurrence of incommensurability, thereby emphasising the existence of a ‘choice’ between two mutually exclusive positions referred to by Badiou. I have performed the task of highlighting the incommensurability of the Promethean and Orphic attitudes in this sub-section, and furthermore, I have provided the backdrop for the incommensurability earlier in this study, specifically by outlining the mutually exclusive qualities of the Promethean as it unfolded historically via the dominance of Christianity⁴⁸², Science, Technology, and Capitalism in one chapter, and then outlining the mutually exclusive qualities of ‘alternative’, Orphic ideas in a different chapter. In light of this incommensurability, the choice between the Orphic and the Promethean is implied.

This aspect of the role of philosophy (as described by Badiou and Žižek) can be stated differently: philosophy can occur when *mutually exclusive positions* are focused upon – see 7.2.1.1 – and the progression of information, themes, and analyses in this study has certainly revealed the mutual exclusivity of the Promethean and Orphic paradigms. My explicit focus in Chapters 1 to 6 may not have been on the incommensurability and mutual exclusivity of the two paradigms, but certainly incommensurability and mutual exclusivity are brought to light if one compares the content of Chapters 1, 2, 3 and 4 to the content of Chapters 5 and 6. Furthermore, the comparison of the aforementioned ‘sets’ of chapters reveals paradoxical relations between the Orphic and the Promethean along the lines discussed in this sub-section, and Badiou (as quoted above) explicitly stated that there “is philosophy, and there can be philosophy, because there are paradoxical relations”. Incommensurability, mutual exclusivity, and paradoxical relations – these three closely related arenas are, according to Badiou and Žižek, philosophical arenas, and it is in this light that I

⁴⁸² It is perhaps worth reiterating what I pointed out in Chapter 3: there are ‘exceptions to the rule’ when it comes to Christianity, St. Francis of Assisi being one of them. See Chapter 3, specifically sub-section 3.2.

can conclude this sub-section by stating that a philosophical process has unfolded in this study. It is partly my hope that one would be cognisant of the choice to align himself or herself with the Orphic or the Promethean in light of the incommensurability I have explored – and the consequences of doing so for nature.

7.2.2.2 Philosophy and the creation of new problems

I have shown in sub-section 7.2.1.1 that Badiou sees the role of philosophy to be partly constituted by the creation of new problems. This point makes complete sense only in the broad context established throughout sub-sections 7.2.2.1 to 7.2.2.4, but in this sub-section I would like to ‘isolate’ the point somewhat and draw attention to one problem – an example of a problem really – that can be focused upon in light of the incommensurability of the concept of sustainability, something I have already introduced in the previous sub-section (7.2.2.1). There I repeated information from Chapter 3: Capitalism is propelled by an inherent ‘grow-or-die’ drive, a drive occupying the ranks of other Promethean drives such as dominion, dominance, and competition. A drive such as this renders null and void the possibility of a common measure (in various arenas, one being the arena of sustainability, as already discussed) between the Promethean and the Orphic. In other words, Capitalism (or, more colloquially, ‘big-Business’) cannot adequately address issues of sustainability, because Capitalism is premised on the notion of endless growth (again, see Chapter 3), and endless growth is by definition anathema to ecological sustainability. A real philosophical problem here is the loss of properly *political* democratic power: government, supposedly something to have emerged out of democratic processes and which is widely expected to represent the best interests of the general public, is the sector generally charged with the task of ensuring ecological sustainability, yet *government is indistinguishable from big-Business* in advanced competitive consumer Capitalist industrial Democratic dominion (ACID) – see Chapter 3 for my examination of this theme. When one says ‘Democracy’, one necessarily implies the entire dispensation out of which the contemporary form of Democracy developed – which is to say the dispensation of ACID – especially insofar as ACID so clearly contemporaneously exhibits the historical Promethean qualities I have traced in Chapter 3. This is not a newly articulated problem by any means, but it certainly is one of the real philosophical problems to be raised in response to the focal areas of Chapters 1 to 6 of this study. So instead of asking *how ACID can transition towards sustainability*, which is an on-going discussion between the different groups and organisations constituting ACID, the focus becomes *the inherent impossibility of ACID becoming sustainable in any real ecological sense*.⁴⁸³

Before moving on, I must make the following comment in light of the assertion that ACID is *inherently incapable of ecological sustainability* in any real ecological sense of the word ‘sustainability’: I have encountered people who believe that from within the arenas of Capitalism, Science and Technology (i.e. contemporary ACID as the manifestation of the Promethean as it has historically unfolded) there will emerge the components for a sustainable human civilisation. Yet, to

483 This is only one aspect of the role of philosophy, namely, raising ‘new’ problems; it should be considered alongside other aspects of the role of philosophy, for example ‘elucidating choice’ (as will be discussed in 2.2.5) in order to appreciate the productive potential of the role of philosophy. For example, in raising ‘new’ problems (2.2.2), the philosopher may partly set the scene for the choice between two incommensurable (2.2.1) paradigms, where the choice (2.2.5) to align more with one paradigm might force one to ‘think the transformation of life (2.2.11). These are all aspects of the role of philosophy according to Badiou and Žižek, and my view is that together these aspects form a dynamic relationship that is much greater than consideration of isolated aspects of the role of philosophy. Nevertheless, I will continue to isolate the said aspects in order to provide a systematic exploration of each.

say again at risk of being overly repetitive, ACID is *inherently unsustainable*, and the evidence (see Chapters 1, 2 and 3) is overwhelmingly in support of this point – there should therefore be no surprised responses to the fact that *a sustainable human civilisation has not emerged* from the reign of Christianity, Science, Technology, and Capitalism, and that *in reality levels of ecological degeneration continue to accelerate*. This line of argument, which is based on consideration of ‘objective facts’ (considering that a ‘fact’ is an agreed-upon interpretation of what is given in inter-subjectively accessible experience) related to the ecological crisis (see Chapters 1, 2 and 3), renders naïve the belief that from ACID there will emerge the ingredients for a sustainable human civilisation. In other words, Technology will not ‘save us’ – so long as technology continues to be manifest in its Promethean format. If it technology were to manifest in an Orphic manner, perhaps in the manner outlined by Braungart and McDonough in their book *Cradle to Cradle* (2002), then the situation may be different, but historically Technology has almost exclusively been ‘directed’ by the Promethean attitude, as I have shown in Chapter 3.

I have shone light on the philosophical problem of *the inherent impossibility of ACID becoming sustainable in any real ecological sense*, which I mentioned after pointing out that ecological sustainability is generally expected to emerge from ACID. I think there is another philosophical step that needs to be taken here. Unfortunately the step amounts to a prediction, and personally I am sceptical of predictions. Nevertheless, the problem I have just mentioned quickly leads to another philosophical problem (that implicitly and unavoidably amounts to a prediction): *the inevitable collapse of the ecosystems* supporting a myriad of life forms, human beings included (this collapse is already occurring – see Chapters 1 and 2). This problem can be arrived at from a different approach, specifically via a recap of the progression of focal areas in this study: 1) there is an ‘ecological crisis’; 2) it has direct physical causes; 3) specific Promethean attitudes underlie the physical causes; 4) there are ‘mechanisms’ that prevent social change ; 5) alternative, ecologically-friendly ideas exist that have positive practical consequences for ecology; and 6) permaculture offers a complete set of principles to go about achieving a ‘cooperative ecology’ in which humans beings act as designers but not as dominators. The problem can be seen in consideration of ‘aspect’ number four: mechanisms exist *to prevent fundamental social change of the ecologically-problematic attitudes*. During my research, I found numerous hypothetical scenarios about how to transition away from the Promethean dispensation at large towards an Orphic one, but I found nothing to suggest that such a transition would actually occur, something which makes sense in light of ‘aspect four’ I just mentioned, i.e. Chapter 4. Again, the evidence (see Chapters 1 and 2) points to increasing scales of ecological destruction alongside the increasing spread of the industries causing vast ecological destruction under the ideological impetus of ACID (See Chapter 3). The problem, therefore, is *the near-certain demise of contemporary human ‘civilisation’ under ‘the established model of humanity’* (a phrase I will later scrutinise more closely in 7.2.2.10): the human population will continue to grow and its rate of consumption will increase as it must in ACID in order to keep ‘growing the economy’ (see Chapters 3 and 4); natural spaces will continue to be cleared for farming, agriculture and ‘development’; resources will continue to be extracted, processed at immense energy expenditures, increasingly transported around the globe via transport systems that continue to grow – see Chapters 1 and 2 for the gist of the crisis. Despite the promises by technocrats that Technology will save us, Technology has by and large been used to facilitate much of the crisis – see Chapter 3 in this regard. And ‘mechanisms’ are in place to prevent this process from reversing (see Chapter 4). What

has just appeared is a list of ingredients of the philosophical problem that is the end, at least, of contemporary civilisation, which is to say the end of ACID.

Further to the above focus of this sub-section, if one takes Žižek's example of a real philosophical question about biogenetics - "is there something in the results of biogenetics that would force us to redefine what we understand by human nature, by the human way of being?" – and applies it to the 'end of contemporary civilisation' scenario, the question becomes this: is there something in the results of the ecological crises, and in the inherent inability of large-scale human-made systems to mitigate the crisis, that would force us to redefine what we understand by human nature, by the human way of being?⁴⁸⁴ This is an issue to which I will return in sub-section 7.2.2.7.

Finally in this sub-section it should be noted that some of the focal points of Chapter 5 stand out in the construction of new problems – at least in the sense that the ideas were new when they were first introduced by the relevant people and highlighted their difference from conventionally accepted ideas. Sheldrake's morphic resonance hypotheses appeared against problems and limitations with hard reductionist Science, while Hancock's work problematises the orthodox story of human development since the Earth's previous glacial maximum. Similarly, Eisenstein, the Occupy Movement, and The Zeitgeist Movement problematise ACID's (anti-)economic system.

7.2.2.3 Changing the concepts of the debate

It is not uncommon to encounter the philosophical problem I stated at the start of the previous sub-section: stated differently, it is the problem of the inherent impossibility of ACID to achieve a sustainable relationship between human beings and the natural world, while at the same time it is widely expected that sustainability will be 'arrived at' from the workings of ACID. I have already offered the comment that this is not a new problem, because people have drawn attention to it before; people like Joel Kovel, who wrote *The Enemy of Nature: the end of capitalism or the end of the world* – the problem I have described is indeed implied in the title of the book. What is interesting to me, in light of the notion of philosophy as (partly) the creation of problems, is that once a problem has been created (or, at least, reiterated), it is often incorporated into 'alternative' frameworks, upon which 'concepts of the debate' are changed, *conceptual frameworks that are particularly Orphic*. This can be illustrated via re-consideration of some of the Orphic ideas I offered in Chapter 5. The Occupy Movement, the Zeitgeist Movement, the 'unnamed movement' of Hawken's *Blessed Unrest*, and Eisenstein in his *Sacred Economics* all are in agreement about the philosophical problem I have focused on in this and the previous sub-section: the contemporary Promethean dispensation (i.e. ACID) is *inherently incapable of achieving ecological sustainability*. In ACID, the 'debate' (as I explained in the previous sub-section) is usually about how to make 'Business-as-usual' sustainable, which is an example of a false problem. Eisenstein, for example, offers concepts that change the debate⁴⁸⁵; I focused on only two examples of such concepts, and I will refer only by name to them here: internalisation of costs, versus externalisation of costs (see Chapter 5 for details). Prior to encountering these concepts, Business-people might only have

484 Claire Colbrook, in her book *Death of the PostHuman: Essays on Extinction*, Vol. 1 (2014), does address this question.

485 ...though he by no means the first to do so; Braungart and McDonough, for example, refer to 'externalisation' in their book *Cradle to Cradle* (2002).

thought in terms of 'costs'; Eisenstein helps in changing the concepts of the debate by presenting two versions of costs for consideration – internalised costs and externalised costs. Business-people may have no tolerance for such a move, i.e. the move of changing the terms of the debate, but it is not important that they even respond for philosophy to occur in the manner described by Badiou and Žižek; all the philosopher needs to do is change the terms of the debate. All of the sub-sections of Chapter 5 indeed “change the concepts of the debate” (2009:51) in a similar manner, so one can again say that what has occurred in this study at different stages constitutes something of a philosophical process as defined by Badiou and Žižek.

7.2.2.4 No certainty of 'being at home'; internal foreignness; the breakdown of organic society

As highlighted in 7.2.1.4, Badiou affirms that “philosophy... was from the very beginning not the discourse of those who feel the certainty of being at home”. All I wish to do in this sub-section is draw attention to the severity of the ecological crisis as depicted in Chapters 1 and 2, and ask a leading question: how can one feel 'at home' on a planet showing signs of catastrophic degradation as a consequence of the actions of human beings? An answer to this question may be that from a purely Promethean perspective, one might feel quite at home when the ancient natural heritage of a given locale is flattened by bulldozers in order to make way for the kind of 'development' symbolic of ACID⁴⁸⁶. From a purely Promethean perspective, the destruction of a natural environment in order to build (for examples), 'another' shopping mall, housing complex, or airport, is a sign of 'progress' in that such activities grow the nation's GDP. If one puts two and two together, so to speak, and considers the quote that opens this sub-section, then such a (naïve) feeling of being at home is *not* the arena of philosophy – in other words, a comfortable response to 'bog-standard' Promethean phenomena is *not* a philosophical response. What is more of a philosophical response can be glimpsed in the following comment from Žižek: philosophical commitment is “marked by its internal foreignness”. In the context of the ecological crisis, proponents of Orphic attitudes are certainly aware of the 'foreignness' of the actions of globally-dominant Promethean 'man'; actions undermining the natural forces maintaining the balance necessary for all life – see Chapters 1, 2 and 3. In this regard, another phrase used by Badiou to 'define' philosophy immediately becomes relevant: philosophy “required a minimum of breakdown of the organic society” – the ecological crisis is indeed a breakdown of organic society in an extreme manner, thereby forcing the conclusion that the ecological crisis is a phenomenon, or rather the result of various Promethean phenomena, in response to which philosophy is well suited to occur.

The breakdown of organic society, and the contradictions of ACID, are clearly acknowledged in the following sub-sections of Chapter 5: In *Blessed Unrest* Hawken traces the development of the unnamed movement consisting of millions of organisations responding to and attempting to curb the causes of and attitudes behind (amongst other things) the ecological crisis, while in the Occupy Movement, the Zeitgeist Movement and Sacred Economics there is a clear focus on the invidious consequences brought about by the impositions of ACID. These focal points do indeed create a sense of foreignness in that one is exposed to data, information, attitudes, socio-political and economic systems, and attitudes in general that make one see the world differently, i.e. in a foreign manner. I might point out, though, that no society, not even one that has become ecologically sustainable

486 This is graphically illustrated in James Cameron's film *Avatar*, in the scene where 'hometree' is flattened.

according to Orphic criteria, can ever rule out a philosophical awareness of ‘foreignness’ or alienation; philosophically speaking, society is always already immanently alienated from itself – no particular society can ever exhaust the ‘universal’ possibilities of otherness that accompany it. Tersely put: just like the human subject, society inescapably ‘differs from itself’.

7.2.2.5 Elucidating choice

This sub-section picks up from where I left off in sub-section 7.2.2.1. I pointed out there that in this study a philosophical activity has occurred simply in the highlighting of incompatible characteristics of the Promethean and the Orphic respectively. But Badiou also said that “a philosophical situation consists in the moment when a choice is elucidated”. The issue here therefore is the extent to which consideration of the broad categories of the Orphic and the Promethean presents one with a choice.

At a very basic level, the incommensurability of the Orphic and the Promethean paradigms obviously does present one with a choice whereby one can align herself with the Orphic agenda, or alternatively with the Promethean agenda. Stereotypical symbols of these two extreme choices come to mind: the ecological activist who rejects ACID as far as it is within his power to do so and actively works to pursue sustainable means by which to live, versus the profit-crazed industrialist who dismisses any criticism of her Promethean endeavours as ‘conspiracy theories’ inhibiting humankind’s climbing of ‘the ladder of progress’. Less extremely, one may recognise the issues arising from the dominance of the Promethean, and instead align herself as much as possible with Orphic endeavours. The act of ‘elucidating’ such a choice is an aspect of the role of philosophy, as stated by Badiou.

I think it is safe to say that these two extreme stereotypes I just described are not often encountered in everyday life. The average citizen of ACID might feel that they have little choice when it comes to acquiring food, water, and building materials, or when it comes to transportation, fiat currency, and electricity. They might feel as if they are born into a world in which they have few real choices, and that they must live according to the established model of humanity. This phrase – the established model of humanity – is one I will explore in sub-section 7.2.2.10, where I will reiterate that *the established model of humanity is Promethean*; suffice it for now to confine my comments to what has already been said about the average person’s belief that they do not really have real choices regarding food, water, buildings, transport, money, electricity, and so on. It is in the dominant Promethean context (the established model of humanity) where a person tends to believe that they do not have the kinds of choices to which I have alluded. It is in this context that the following assertion is made: *the Promethean paradigm does not ‘offer’ choice in the philosophical sense of the word*. I make this remark in the light of what has already been explored about the role of philosophy partly arising when the mutual exclusivity of ‘positions’ arise. The Promethean agenda, as extensively established in this study, is notoriously rigid in its *modus operandi* (see Chapters 3 and 4), and ‘choices’ are confined to that which is commensurable within the framework of the Promethean and its contemporary manifestation as ACID. Further to this, it was seen in Chapter 4 that ‘mechanisms’ exist that have prevented alternatives to ACID from arising. Here is the crux: if part of the role of philosophy is to elucidate choice in the philosophical sense of the word (i.e. choices between mutually exclusive positions, choices between incommensurable stances, choices arising out of changing the terms of the debate, and so on), then the realm of the Promethean negates the

possibility of philosophy as argued for by Badiou and Žižek because the Promethean perpetuates only its own dominance; accordingly, superficial choices arise (for example, the choices available in a consumerist society), while real choices (for example, a non-consumerist lifestyle altogether) are marginalised or negated⁴⁸⁷.

On the other hand, the arena of the Orphic, wherein respect for the diversity and mystery of nature is prioritised, real choice is catered for. I have argued (based on Hadot's work in *The Veil of Isis* – see Chapter 3) that the Promethean is defined partly by its characteristic tendency to dominate. As I have said, domination comes at the expense of 'alternatives' to that which dominates. The Orphic is opposite in the sense of being an arena in which cooperation is paramount – this implies the impossibility of excluding a plethora of real choices, choices that would result in radically different ways of being, different physical systems, and different 'experiments of living'. Permaculture is an excellent example of such a system (as seen in Chapter 6), where the first 'action' recommended in the design-approach is a kind of non-action – specifically, this first 'action' is the process of observation, which requires a halting of 'Business-as-usual' (a halting of 'the established model of humanity' – see 7.2.2.10). A human being engaging in such a process will eventually have to make a decision, but it is one 'dictated to' by the details of the environment observed by the human being. The ideal permaculturalist would make choices impacting on the well-being of the area's ecology in a manner beneficial for the ecology *and* the person. The observation process reveals to the human being that whatever she does is indeed a choice, and that some choices are *radically* different to others. Finally, the sub-sections constituting Chapter 5 also all present one with information that radically challenges the assumptions, ideologies, narratives, paradigms and attitudes constituting the Promethean status quo.

7.2.2.6 Shedding light on the distance between power and truths

As seen in 7.2.1.2, Badiou (2009:8) states that between "power and truths there is a distance... Philosophy's mission here is to shed light on this distance". In the specific example Badiou was exploring, 'power' was symbolised by General Marcellus – power in this sense denotes the standard definition: "the ability or right to control people or things"; "political control of a country or area"; "a person or organization that has a lot of control and influence over other people or organizations"⁴⁸⁸. 'Truths' in the context of Badiou's example were symbolised by Archimedes' interest in an objective process unimpeded by power; in Archimedes' case, a mathematical calculation, but 'truths' need not be confined to the realm of mathematics. The same ingredients are applicable to aspects of this study: on the one hand, the Promethean attitude/ideology/paradigm/model has been shown to have manifested itself as the dominant world power for many centuries, culminating in 'advanced' competitive consumer Capitalist industrial Democratic dominion (ACID). On the other hand, demonstrable facts (i.e. 'truths') about what constitutes the ecological crisis exist, and more importantly for the focus of this sub-section, facts about what causes the ecological crisis also exist. There is a massive distance between the power of the Promethean (which is to say the power of ACID) and the truths of the ecological impact of this power. This can be seen in a brief revisit of the

487 In the introduction to this study, I suggest that the Promethean and ACID 'do not do real dialectic' – I suggest that this part of the introduction to the study be read in conjunction with the point just made, specifically the point about the Promethean perpetuating only its own dominance.

488 <http://www.merriam-webster.com/dictionary/power> accessed 17 October 2016

example explored in 7.2.1.2 of sustainability – there it was seen that an awareness of the need for sustainability is often incorporated into Promethean endeavours, but always in a manner whereby the systemic cogs of the Promethean edifice must keep turning as a priority. The edifice is the Promethean power-structure of ACID. The extent of the demonstrable need for radical change in order to achieve real sustainable human practices is an example of a faint glimmer of truth; but this ember of truth is extinguished by incorporating an unrecognisable fragment of it into the ‘growth engine’ of ACID, because as already discussed extensively, ACID (as the contemporary manifestation and culmination of the Promethean) is *inherently* unsustainable. In other words, power is perpetuated when an inherently unsustainable structure incorporates ‘the sustainability mandate’ into its remit, and any sight of ‘the truth’ (in this case, the real need for real sustainable endeavours, or the causes of problems surrounding sustainability) is obscured or lost. Part of the role of philosophy is, as discussed in 7.2.1.2, to draw explicit attention to this kind of problem, but now in light of what has been explored in this sub-section, part of the role of philosophy is also to shed light on the distance between power and truths, which I have worked towards doing at various stages in preceding parts of this study. The Zeitgeist Movement, the Occupy Movement, Sacred Economics, and *Blessed Unrest*, via their analyses of ACID’s systems, all reveal the distance between power and truths.

7.2.2.7 Redefining human nature

I would like to pick up here where I left off at the end of sub-section 7.2.2.2. There, I pointed out the following: if one takes Žižek’s example of a real philosophical *question* about biogenetics – “is there something in the results of biogenetics that would force us to redefine what we understand by human nature, by the human way of being?” – and applies it to the broad issue of the ecological crisis, the question becomes this: is there something in the results of the ecological crisis that would force us to redefine what we understand by human nature, by the human way of being?⁴⁸⁹ I would like briefly to pursue this line of inquiry in this sub-section.

First, I need to make a disclaimer – Žižek never does answer his version of the ‘real philosophical question’ he identifies as relevant to biogenetics in general. Based on my reading of *Philosophy in the Present*, it is not the role of philosophy to answer the questions that the philosopher asks. Rather, the role of philosophy is to ask the ‘real’ philosophical questions, and ask them in a manner that achieves all the ‘philosophical criteria’ as enumerated by Badiou and Žižek, e.g. leaving room for the elucidation of choice, creating distance between power and truths, identifying incommensurability, and so on.

Second, I must draw attention to what Žižek saw as false questions to emerge in consideration of biogenetics: “how far are we allowed to go into biogenetics? Does biogenetics threaten our freedom and autonomy?” These questions can be adapted so that they have a focus relevant to this study: how far are we allowed to deforest, pollute, consume, lose topsoil, grow the population, and so on?

⁴⁸⁹ This is where ‘extinction studies’, such as Claire Colebrook’s work and that of others, are important. Her books on extinction are free for download – she articulates the philosophical implications of the ecological crisis for our conception of humanity quite starkly. However, see the next paragraph of this sub-section, where I point out that it is not the role of philosophy to answer the questions that the philosopher asks.

Does the ecological crisis threaten our freedom and autonomy? It is interesting that under the reign of ACID, 'resource management' departments⁴⁹⁰ in Business/industry and government have asked such questions for decades, without managing to avert the ecological crisis (and contrarily exacerbating it), giving further credence to the notion that the listed questions are false questions, at least in the realm of philosophy.

Third, it is worth refocusing on Žižek's criticism of Habermas's general approach to biogenetics. As already explored in sub-section 7.2.1.3, Žižek says of Habermas that his "whole intervention betrays the fear that something could fundamentally change, that a new dimension of the 'human' could emerge and the old idea of human dignity and autonomy would not be safely conserved". This is entirely appropriate in light of the dominant Promethean worldview – i.e. the fear that 'the human' could change – because it is partly defined by its own growth and expansion. While Žižek's remark about fear underpinning Habermas's approach to biogenetics must be seen, first of all, as a way of contrasting this approach with a truly philosophical one, Habermas's comments/concerns are directly transferable and relevant to the potential changes that the ecological crisis implies for humanity: the Promethean worldview has, at different times since the reign of Christianity, and through the times of the development of reductionist Science, Technology and Capitalism, enforced a (dominant) view of humankind as a species that inherently has dominion over nature, a species that can forcibly extract the 'secrets of nature' without negative consequences⁴⁹¹, a species that can use its Technology to process nature for whatever reasons the members of humankind deem fit, a species that can endlessly profit from the exploits of nature. The ecological crisis is showing humankind that such Promethean views about 'the human' are downright *wrong*, and moreover, that the time has perhaps come to question the 'old idea' of supposed 'human dignity and autonomy'. After all, what does the despoliation of nature and her creatures by humankind say about its 'dignity and autonomy'? Does our species still deserve such an elevated status, or has it been irredeemably sullied by humankind's demonstrable abuse of its 'high' moral station?

Take the Capitalist assumption that endless growth is possible (and even desirable) as an example of a view impacting on what it means to be human – the idea being that part of what it means to be human is to engage in the endless expansion of the human population while ploughing through increasing quantities of natural 'resources'. The ecological crisis is a sober reminder that such an assumption is simply wrong, because the 'endless-growth' assumption has been instrumental in a Promethean process destabilising the conditions necessary for sustaining the myriad forms of life on Earth. Furthermore, again referring to what Žižek says about Habermas – that he fears the loss of the old idea of human dignity and autonomy – it is clear that human beings are simply not autonomous at a fundamental level: the impact of unrestrained economic growth on the ecology of the planet shows that human beings *must* respect their dependence on nature, and accordingly adjust and limit their actions lest they undermine the conditions for any kind of human action, never mind autonomy – thus 'human nature' shifts from its Promethean sense (of having dominion over everything) to its

490 An appellation explicitly reminiscent of Heidegger's observations about the technological view of nature as a standing reserve of resources – see Chapter 3. Another comment here – in Business/industry and government, human beings are turned into resources, as indicated by the term 'Human Resources', which for my purposes falls under the umbrella term 'Resource Management'.

491 This view is rendered immediately naïve if one considers the devastating consequences of the extraction of nature's atomic 'secrets' that partly resulted in the invention and use of the atomic bomb – as already seen, in this chapter, the role of the philosopher is to shed light on the distance between such power and truths.

Orphic sense (of embracing its interdependence with all that constitutes an ecology, of which humans are merely one part). In philosophical terms, human ‘autonomy’ is limited by its ecological ‘heteronomy’.

All the areas of focus in Chapter 5, where the focus is on Orphic attitudes, contribute to a redefinition of human nature in that they offer instances of human actions, ideas, ingenuity, and ‘alternatives’ where the view of human nature associated with ACID – which is to say the historically dominant view of human nature – is challenged, and alternative human actions, ideas, and ‘alternatives’ are proposed and/or explored.

7.2.2.8 Singularity participating in universality

As quoted earlier, Žižek said the following of philosophy: that it focuses on a “singularity that immediately participates in universality, breaking through the idea of a particular order”. On closer inspection, this statement reveals some Orphic qualities. Universally, existence of any part of an *organic* system is dependent on the existence of other parts of the given organic system – the Orphic recognises this. Co-dependence seems universal – at least for organic systems. ACID, the epitome of the Promethean, does not recognise this; it *is* the current order (see 7.2.2.10), and it actively prevents breaks in the current order (as seen in Chapter 4), i.e. it prevents breaks in itself and perpetuates Promethean particulars at the expense of the aeons-old natural processes that gave rise to all organic life forms. I am suggesting here that this process, whereby organic life unfolds and whereby organic life *can* unfold, is to a considerable extent a ‘singularity’ that *facilitates* the unfolding of particulars – indeed, in ancient Greek philosophy this process was known as *physis* (Hadot 1995:260). The continuation of this distinctive, singular universal process on Earth in coming decades and centuries is clearly placed into question considering the ecological crisis. Of course, it is questionable that the conditions necessary for life on Earth will ever be terminated entirely before the explosion of the sun when it reaches the end of its lifespan, because even after cataclysmic events such as comet impacts, life has managed to continue on this planet. The point I wish to make is that, in prioritising the preservation of the conditions necessary for life on this planet, rather than simply prioritising anthropocentrism and the reign of Promethean ‘man’, the Orphic attitude aligns itself with a singular universal (i.e. the universal process whereby particulars arise) and thereby with one of the focal areas of philosophy according to Žižek. On the other hand, in perpetuating the particularities of the Promethean at the expense of the conditions required for organic life on Earth, the Promethean attitude is pitched against the ‘flavour’ of the singular universal, and therefore against this aspect of philosophy as delineated by Žižek. In this light it is again the case that the Promethean is an arena void of philosophical characteristics, while the Orphic again strikes one as a realm compatible with aspects of the philosophical ‘project’ as commented on by Badiou and Žižek.

7.2.2.9 Preconceived ideas of human nature

In 7.2.1.4, I quoted the following assertion from Badiou (2009:73): “philosophy really needs to be able to grasp that in truths, in new problems, there is something which is irreducible to any preconceived idea of human nature”. I have already addressed the philosophical focus on new

problems in 7.2.2.2, as well as the focus on truths in 7.2.2.6. Now I wish to address the theme of preconceived ideas of human nature not being compatible with philosophical commitment as explained by Badiou and Žižek in *Philosophy in the Present*. My argument in this regard is straightforward: the Promethean is the arena enforcing a ‘superior’ view of human nature, i.e. superior to the rest of the constituents of nature – this was seen throughout Chapter 3, alongside other rigid Promethean characteristics of the broad Promethean paradigm. Furthermore, these characteristics must be considered in view of what was shown in Chapter 4, specifically that mechanisms have arisen during the reign of the Promethean that prevent ‘social change’ in any direction other than the Promethean. Preconceived ideas of human nature are therefore crucial components in the Reign of the Promethean.

Orphic ideas, on the other hand, actively work to shatter preconceived ideas of human nature, as seen throughout Chapter 5; and permaculture (which I showed in Chapter 6 to be fundamentally Orphic in character) offers no preconceived ideas of what human nature is, but rather a series of adaptable principles (perhaps one can even note the universal flavour of these principles) that can be applied to achieve different (particular) outcomes in different (particular) contexts. Orphic ideas, in their inherent tolerance for, or receptivity to, difference and the universal process whereby organisms change over time, therefore exhibit the quality of *not* promoting any one preconception of human nature. If philosophy is aligned with that which is impossible to be reduced to preconceived ideas of human nature, then in this regard the Orphic is a compatible arena, while the Promethean is not.

7.2.2.10 Humanity as it has been historically constituted / The established model of humanity

These phrases – ‘humanity as it has been historically constituted and defined’, and ‘the established model of humanity’ – really stood out to me as two of the most powerful phrases in *Philosophy in the Present* in the context established in the first several chapters of this study. In Chapter 3, for example, it became clear that the established model of humanity has a specific history with identifiable features which collectively, under inspiration from Hadot, I have called ‘Promethean’ in this study. In Chapter 4, examples of ‘mechanisms’ that perpetuate the dominant Promethean ‘shapers of discourse’ were identified and explored. To restate: in one chapter there was a focus on humanity as it has been historically constituted, and in the other chapter there was a focus on what perpetuates the established model of humanity. Now consider Badiou’s comment about philosophy, one I introduced in 7.2.1.4 of this chapter:

Each time that philosophy confines itself to humanity *as it has been historically constituted and defined*, it diminishes itself, and in the end suppresses itself. It suppresses itself because its only use becomes that of conserving, spreading and consolidating *the established model of humanity*.
[Emphasis added]

I have shown that the established model of humanity *is* Promethean, and I have shown that it is perpetuated by specific mechanisms. It therefore follows, in light of Badiou’s aforementioned assertion, that each time a person (for example) ‘defends extant Capitalism’ (one of the dominant contemporary manifestations of the Promethean), philosophy “is diminished” and suppressed⁴⁹². In

492 This notion, that the role of philosophy is absolutely not to defend the established model of humanity, would come as an unpleasant surprise to various members of a

order to count as a philosophical activity – in the context established by Badiou and Žižek, at least – any talk of the particularities of Capitalism (or Christianity, reductionist Science, and Technology in their dominant Promethean formats) must occur against a ‘philosophical backdrop’ whereupon an awareness of (for example) incommensurability presents itself. Incommensurability is just one example of a philosophical ‘component’ of the backdrop I have just mentioned; other examples have appeared throughout this first half of this chapter: creating problems, changing the concepts of the debate, the moment of foreignness, and so on. The examples of Orphic ideas focused on in Chapter 5, on the other hand, do indeed participate in the philosophical process identified so far in this Chapter: creating problems regarding the established (Promethean) model of humanity, changing the concepts of the debate, focusing on the ‘foreignness’ of certain ‘tendencies of humanity’ that, under Promethean paradigms, are taken as unquestionable (for example, the tendency to equate Capitalist ‘development’ with ‘democracy’ and thus ‘freedom’).

I need to point out that if the Orphic were to become the ‘dominant’ model of humanity, and perpetuate itself via (for example) the focus on only mutually *inclusive* ‘alternatives’ (see 7.2.1.1), then one may expect that it too would perhaps become a sphere void of philosophical characteristics as explored by Žižek and Badiou. However, as I have already pointed out elsewhere in this chapter (7.2.2.2), the Orphic is inherently incapable of domination in the Promethean sense of the word. The Promethean dominates, has dominion, compartmentalises, reduces, competes, and so on (see Chapter 3), all of which exclude the ‘foreignness’ of non-Promethean ideas (see Chapter 4). Manifestations of Orphic principles, on the other hand, inherently cannot do these things lest the said manifestations lose the qualities characterising them as Orphic. It is in light of this information that I must repeat what has been said elsewhere, but now using the appellative phrases of this sub-section: the Orphic can, per definition, never confine itself to *humanity as it has been historically constituted* – in doing so, it would become something other than Orphic. The Orphic therefore seems inherently aligned with the character of philosophy as it has been presented by Badiou and Žižek, i.e. as something that does not stagnate at any one view of humanity as it has been historically constituted. The Orphic is inherently open to ‘foreignness’, to cooperation, to patiently confronting incommensurability, and (to name one more characteristic of philosophy) open to the ‘transformation of life’, which brings me to the next sub-section.

Accordingly, the focal areas of Chapter 5 do either implicitly or explicitly focus on the established model of humanity in that they either directly or indirectly analyse and/or criticise the established model. Importantly, in all the sub-sections of Chapter 5, *alternative* ideas, actions, systems, etc. are focused on, thereby surpassing the limitations of the orthodoxy of humanity as it has been historically constituted and defined.

7.2.2.11 Thinking the ‘transformation of life’

Consider what Badiou (2009:11) mentioned about philosophy in light of the philosophical situation represented by the ‘smile’ on the faces of the crucified lovers (see 7.2.1.2): “What will philosophy

philosophy group I used to attend. Various members of the group would consistently defend (for example) Capitalism, which is to say defend a crucial ‘shaper’ of humanity as it has been historically constituted, and they would display clear indignation when critiques of the established Promethean model of humanity were offered and followed by the unavoidable calls for transformation.

tell us then? It will tell us that ‘we must think the event’. We must think the exception. We must know what we have to say about what is not ordinary. We must think the transformation of life”. I wish to focus here only on the final sentence: *thinking the transformation of life*. At the risk of over-repetition of what is at this stage of the study a common mantra, ‘mechanisms’ exist that have prevented alternatives to ACID from arising (as shown in Chapter 4). In other words, mechanisms exist that prevent the *transformation* of life away from the reign of the Promethean. It follows that in the realm of the Promethean, one does not ‘think the transformation of life’ (in any real sense of the word ‘transformation’⁴⁹³). Furthermore, it follows that the reign of the Promethean is not a reign in which philosophy (as it has been presented by Badiou and Žižek) takes place; philosophy would have to occur in a manner whereby the dominance of the established model of humanity is, for example, under scrutiny – and this is exactly what has partly occurred in this study, namely the scrutiny of various Promethean components of humanity as it has been historically constituted. When Orphic ideas were explored in Chapter 5, and when permaculture principles were considered, they occurred against a backdrop of (potential and actual) transformation – specifically a transformative process where ideas do not dominate but *arise* in cooperation with a myriad of factors that constitute a given context. Permaculture principle number twelve explicitly draws attention to the idea of transformation via the use of the word *change* – ‘creatively use and respond to change’.

7.2.2.12 Comments on the structure on this study: example of a philosophical progression

I would like to conclude this half of Chapter 7 by once again identifying what has occurred in previous chapters of this study, and while doing so point out where some aspects of the role of philosophy (as explored in 7.2.1.1 to 7.2.1.4 and 7.2.2.1 to 7.2.2.11) are evident simply by considering the focus of each chapter.

- In Chapter 1, information pertaining to various aspects of the ecological crisis was compiled. In light of what has been established about the role of philosophy so far in Chapter 7, one could say that in Chapter 1 a compilation of information was offered *pertaining to the breakdown of organic society, thereby creating a sense of foreignness with regard to the ‘home’ planet whose health and well-being are by default taken for granted under the established model of humanity* – these are some aspects of the role of philosophy, as already established in this chapter.
- In Chapter 2, information pertaining to the direct physical causes of the ecological crisis was compiled. In light of what has been established about the role of philosophy so far in Chapter 7, one could say that in Chapter 2 a compilation of information was offered *which displaced and problematised, and perhaps ‘foreign-ised’, ubiquitous Promethean industries and practices* – these are some aspects of the role of philosophy, as already established in this chapter.
- In Chapter 3, information pertaining to the attitudinal and ideological causes of the ecological crisis was compiled. In light of what has been established about the role of

⁴⁹³ See my comments, in the introduction to this study, regarding ACID ‘not doing dialectic’.

philosophy so far in Chapter 7, one could say that in Chapter 3 a compilation of information was offered *that identifies problems with the established dominant Promethean attitude and with humanity as it has been historically constituted; and sheds light on the distance between power (i.e. the spread of the Promethean paradigm, culminating in ACID) and truths (the devastating ecological impact of the said paradigm as established in Chapters 1 and 2) –* these are aspects of the role of philosophy, as already established in this chapter.

- In Chapter 4, examples of change-prevention ‘mechanisms’ were explored, thereby explaining aspects of the means by which the Promethean is perpetuated. In light of what has been established about the role of philosophy so far in Chapter 7, one could say that in Chapter 4 a compilation of information was offered *pertaining to the manner in which humanity as it has been historically constituted (or the established model of humanity) is perpetuated, while simultaneously drawing attention to the difficulties of ‘thinking the transformation of life’ in a context actively monopolised by the Promethean –* these are aspects of the role of philosophy, as already established in this chapter.
- In Chapter 5, examples of ‘ecologically-sensitive’, Orphic ‘ideas’ were explored. In light of what has been established about the role of philosophy so far in Chapter 7, one could say that in Chapter 5 a compilation of information was offered *pertaining to potential processes whereby ‘the transformation of life can be thought’ via the consideration of alternatives to the established model of humanity; and pertaining to alternatives to preconceived ideas of human nature. Information was offered indirectly elucidating choices between Promethean and Orphic attitudes, emphasising the incommensurability of the Promethean and Orphic paradigms, all of which changes the concepts comprising the Promethean ‘status-quo’ debate –* these are several aspects of the role of philosophy, as already established in this chapter.
- In Chapter 6, information pertaining to permaculture principles and practices was explored. In light of what has been established about the role of philosophy so far in Chapter 7, one could say that in Chapter 6 a compilation of information was offered *pertaining to a process whereby ‘the transformation of life’ can be thought; pertaining to a series of ‘singular’ principles that can be said to participate in a universal process of the cycle of organic life; pertaining to principles that change the concepts framing the Promethean ‘status-quo’ debate; and pertaining to choices that can be made (specifically regarding how to interact in a given environment) –* these are aspects of the role of philosophy, as already established in this chapter.

7.3.1.1 Hadot on Philosophy as a transformative process

At the beginning of Chapter 6 some attention was drawn to the urgent need (in the context of the ecological crisis) “to transition away from ACID⁴⁹⁴ – the Promethean writ large – towards a more Orphic dispensation, where a cooperative (versus competitive) approach is taken by human beings towards nature”. In order to support the focus on the urgent need to transition, relevant comments by Kovel, Baer, Harvey and Vetlesen were offered. Considering the comments by the listed thinkers as a backdrop, and with the focus of this chapter being partly on philosophy in hindsight of the broad context established during Chapters 1 to 6, attention will now be drawn to the penultimate paragraph⁴⁹⁵ of Hadot’s essay, *Philosophy as a Way of Life*⁴⁹⁶ (1995:275):

Such is the lesson of ancient philosophy: an invitation to each human being to transform himself. Philosophy is a conversion, a transformation of one’s way of being and living, and a quest for wisdom. This is not an easy matter.

Considering that the words “conversion” and “transformation” are synonymous with the idea of “transition”⁴⁹⁷, in that they all denote a ‘movement’ from one state to another, then the relevance of Hadot’s remarks to the focus of this study should immediately become clear. In this study, a dichotomy has arisen between what has broadly been referred to as the Promethean attitude and the Orphic attitude, with the focus being on the process of transition (or conversion, or transformation) from the former to the latter via, first, ‘Orphic ideas’ (Chapter 5), and second, the implementation of permaculture principles (Chapter 6). The sense of transition / transformation / conversion is thus common to both (aspects of) this study and Hadot’s work. This sense of transition / transformation / conversion was also apparent in the first half of this chapter where I explored the role of philosophy as explained by Badiou and Žižek – as seen above, Badiou stated explicitly that part of the role of philosophy is to “think the transformation of life”; that the role of philosophy is absolutely not to perpetuate *the established model of humanity*. Clearly then, this theme of transformation away from one state towards another resonates thematically with various focal areas of this study.

The common ground between the various areas of focus of this study and Hadot’s essay does not end with the fact that aspects of this study and the essay focus on transition/transformation. There are several important themes evident in the essay that can be related directly to themes and issues explored during this study. Importantly, there are also some considerable differences. Some of these similarities and differences will be considered in some of the following sub-sections.

Before moving on to the points of consideration I have just mentioned (and other points of consideration not yet mentioned), I would like to explore as a starting point a theme often heralded as a central one to emerge from Hadot’s exploration of philosophy as a way of life: the theme of *discourse about philosophy versus philosophy as a way of life*. This is my starting point in a longer process in which ultimately I argue that philosophy as a way of life is thoroughly Orphic in character,

494 ‘Advanced’ competitive consumer Capitalist industrial Democratic dominion – the Promethean ‘writ large’. This theme has been extensively established at this point of the study.

495 Note that the final paragraph of the essay is not written by Hadot, but is rather constituted by a quote from Spinoza.

496 Note that the title of the essay is indicated by the italics as well as proper noun capitalisation, ‘Philosophy as a way of life’. When used as the title of the essay, italicisation and proper noun capitalisation will be used; but when used to denote the concept of philosophy as a way of life, the phrase will simply be: philosophy as a way of life. Note that I may still use italics to emphasise the phrase.

497 ...as used in the phrase, ‘the urgency to transition’, at the start of Chapter 6

and that it is of particular importance considering the context of the ecological crisis as it has been explored so far in this study.

7.3.1.2 Discourse about philosophy / Philosophical discourse

When I was first introduced to Hadot's work, it was really an introduction to the final essay of his book called *Philosophy as a Way of Life* – the title of the essay shares the title of the book. Even more specifically, I was introduced to a central dichotomy focused on by Hadot in the essay: *discourse about philosophy*, versus *philosophy as a way of life*, as evident in the following observation by Hadot (1995:269): "In general, historians of philosophy pay little attention to the fact that ancient philosophy was, first and foremost, a way of life. They consider philosophy as, above all, philosophical discourse". It is very interesting that Hadot singles out what I have called a central 'shaper of discourse', encountered in Chapter 3 of this study – namely Christianity – as instrumental in the process whereby philosophy (to speak generally) gradually lost the quality of being a way of life and instead became seen as philosophical discourse or discourse about philosophy – I will use these terms interchangeably. Here is Hadot (Ibid) on the "origins of this prejudice" towards philosophy as *discourse about philosophy* rather than *philosophy as a way of life*:

I believe it is linked to the evolution of philosophy itself in the Middle Ages and in modern times. Christianity played a considerable role in this phenomenon. From its very beginnings – that is, from the second century AD on – Christianity had presented itself as a philosophy: the Christian way of life.

The phrase, "had presented itself", is conspicuous: the character of philosophy as a way of life (as I will show in coming sub-sections) is hardly comparable to the institutionalised *modus operandi* and accompanying dogmas that partly characterise the Christian church. Hadot (1995:270) explains further:

The Middle Ages was to inherit the conception of monastic life as Christian philosophy, that is, as a Christian way of life. ... At the same time, however, the medieval universities witnessed the elimination of the confusion which had existed in primitive Christianity between theology, founded on the rule of faith, and traditional philosophy, founded on reason. Philosophy was now no longer the supreme science, but the 'servant of theology;' it supplied the latter with the conceptual, logical, physical, and metaphysical materials it needed. The Faculty of Arts became no more than a preparation for the Faculty of Theology.

The idea I am most focused on here is that prior to Christianity, philosophy in the Hellenistic and Roman eras was a way of life – the character of this manifestation of philosophy, and the implications thereof in the context of the ecological crisis as I have described this context in this study, will be explored in following sub-sections. Christianity arose (See Chapter 3) and, in Hadot's view, presented itself as a way of life – one could say that it borrowed from Romans and Hellenes the characteristic of being a way of life, despite the huge difference between the older notion of philosophy as a way of life versus the Christian way of life – the latter fundamentally requires faith in a 'Supreme Being' for redemption and salvation, while the former is entirely different in its purview (much more on the former below). As suggested by Hadot (see above quote), Medieval universities gradually became compartmentalised (a process well beyond the scope of this study), and because Christianity, (a dominant shaper of discourse for many centuries – see Chapter 3) had 'presented itself as a philosophy' (Hadot's words), the association between philosophy and Christianity stuck –

hence the often-encountered notion of philosophy being the handmaid of theology, which aptly encapsulates the notion of philosophy as philosophical discourse. Hadot (1995:270) points out further developments with the university to explain philosophy's character as discourse about philosophy: the "Middle Ages saw a radical change in the content of philosophy as compared to antiquity. Moreover, from the medieval period on, theology and philosophy were taught in those universities which had been creations of the medieval church". Commenting further on this institutionalised philosophy, Hadot (Ibid) explains the following:

One of the characteristics of the university is that it is made up of professors who train professors, or professionals training professionals. Education was thus no longer directed toward people who were to be educated with a view to becoming fully developed human beings, but to specialists, in order that they might learn how to train other specialists. This is the danger of 'Scholasticism,' that philosophical tendency which began to be sketched at the end of antiquity, developed in the Middle Ages, and whose presence is still recognizable in philosophy today.

This scholasticised 'philosophical tendency' is, according to Hadot, a tendency to engage in discourse about philosophy rather than to manifest philosophy as a way of life, where the latter (to comment on it briefly here) facilitates a process of becoming a "fully developed human being" (Ibid). Hadot points out (Ibid) that the "scholastic university, dominated by theology, would continue to function up to the end of the eighteenth century", and thereafter, "a new philosophy made its appearance within the university, in the persons of Wolff, Kant, Fichte, Schelling, and Hegel. From now on, with a few rare exceptions like Schopenhauer or Nietzsche, philosophy would be indissolubly linked to the university" (Hadot 1995:271). This indissoluble link to the university, according to Hadot (Ibid), comes at the exclusion of the manifestation of philosophy as a way of life:

In modern university philosophy, philosophy is obviously no longer a way of life or form of life – unless it be the form of life of a professor of philosophy. Nowadays, philosophy's element and vital milieu is the state educational institution; this has always been, and may still be, a danger for its independence. ... [M]odern philosophy is first and foremost a discourse developed in the classroom, and then consigned to books. It is a text which requires exegesis.

The notion of 'philosophy without independence' further contextualises the character of philosophical discourse, or discourse about philosophy, adding to the general character of philosophical discourse as glimpsed in this sub-section: something largely defined by its historical ties originally to the Church and later the "state educational institution", and something associated with exegesis. This is the kind of philosophy that cannot disrupt what Badiou referred to as *the established model of humanity, or humanity as it has been historically constituted*, further characterising it as institutionalised. In philosophical discourse, one focuses on a given 'philosophy' – for examples, the philosophy of Wittgenstein or Kant – and explores parts of it systematically, evaluates arguments, and so on, but thereafter tends to go about her life as a functional member of her particular society – which is to say going about life in ACID, because ACID is the epitome of the Promethean project which has, via globalisation, come to dominate the globe after having unfolded with increasing momentum for 2000 years. I suggest that in this format, philosophy is proverbially part of 'the ecological problem' in that it occupies a position as another cog in the ubiquitous machine of ACID, for example, as a means to an end of earning a living, where the philosopher finds herself perpetuating ecologically-destructive system components by default. I am not blaming philosophers for such a state of affairs, but merely pointing out the systemic reality into which we are born (as depicted in Chapters 3 and 4).

Note that I am *not* pursuing in this sub-section the notion that philosophical discourse, or discourse about philosophy, is inherently aligned with the Promethean attitude. What I am pointing out, however, is that the change from philosophy as a way of life (in the Hellenistic and Roman periods) towards the increasingly institutionalised ‘philosophical discourse’ (or discourse about philosophy) occurred during the same epochs in human history during which the ‘ideological ingredients’ (see Chapters 3 and 4) propelling ecologically-disastrous human activities (see Chapter 2) started to become dominant as the foundation was laid for what would become ACID. I showed in Chapter 3 that the global expansion and ultimate rule of the dominion-imperative *began properly with Christianity*⁴⁹⁸, and that other Promethean attitudes became dominant via the later developments of Promethean Science, Technology, and Capitalism. The relegation of philosophy as a way of life (which I will soon argue is Orphic in ‘attitude’) to an almost purely theoretical and academic activity, therefore occurred alongside the expansion of dominant Promethean ‘shapers of discourse’ – i.e. philosophy became less and less a way of life (more on this throughout the rest of this chapter), while lived experience was increasingly shaped by the dominion-imperative (which is not a philosophical concept, but instead a product of, initially, Christian dogma – again, see Chapter 3). This is hardly surprising: I have argued extensively already in this study that the Promethean attitude, defined partly by competition, dominion, and expansion *is manifest at the expense of that over which the Promethean attitude takes it upon itself to preside*; and furthermore, that perpetuation mechanisms (see Chapter 4) continue the dominance and spread of the Promethean attitude at the expense of ‘alternatives’ to it. The character of philosophy as a way of life, as I will show below, is Orphic, and as such is inherently susceptible to Promethean dominance. In other words, the dominance of Promethean attitudes marginalises or even negates that which inherently does not share Promethean qualities – one could say that that which is inherently competitive (i.e. the Promethean) devours that which is inherently cooperative (i.e. the Orphic) – I have described this process in the former half of this chapter, and as I will show during the rest of my focus on Hadot’s exposition, philosophy as a way of life has considerably Orphic characteristics. If my train of thought is correct, then the result is of course that philosophy as a way of life (in being aligned with the Orphic attitude) was negated by the Promethean attitude via the misdemeanours of the Christian church – and this train of thought *has already been shown to have some support* because I have already offered Hadot’s stance that in the modern educational institution, philosophy is “no longer a way of life”. But just because philosophy as a way of life is ‘dead’ in the modern educational institution, it does not necessarily mean it has been wiped from the slate of human memory – indeed, Hadot has preserved it in his work, and I now turn to it in an attempt to encourage people to re-approach philosophy as a way of life for its relevance to the ecological crisis in particular.

At this stage of my exploration of Hadot’s ideas, I do not wish to conduct the normative activity of asking whether or not philosophy *should be* a way of life or be more discursively focused. Instead, I wish to focus on the extent to which philosophy *as a way of life* is aligned with the Orphic as depicted in this study – my initial research into this topic suggests (as I have already stated) that philosophy as a way of life is indeed aligned with the Orphic attitude. If I can show Hadot’s exploration of philosophy as a way of life to resonate with the Orphic attitude, then it may be

498 Though there was a precursor to the Promethean attitude with the Greek interest in Mechanics, but this was by no means a large-scale phenomenon, whereas the imposition of Christianity onto the world (and along with it the imposition of the dominion-imperative) was the start of the large-scale spread of the Promethean attitude. See Chapter 3.

possible to argue that this ‘manifestation’ of philosophy can indeed play a therapeutic role in the specific context of the ecological crisis, a crisis that has emerged under the captaincy of the Promethean attitude. Individuals may then be left to consider for themselves the implications of my investigation and argument, and conduct their own normative activity.

7.3.1.3 Philosophy as a way of life (à la Hadot) is Orphic: the Philo extract

Hadot begins his eleven-page essay with a lengthy passage written by Philo of Alexandria⁴⁹⁹, stating (1995:265) that the extract brings to the forefront “one of the fundamental aspects of philosophy in the Hellenistic and Roman eras”: during this period, “philosophy was *a way of life*”. Turning now to the first sentence of the extract (1995:264): Philo recommends to “every person...who *is in training for wisdom*”⁵⁰⁰ that they avoid a certain kind of individual; Philo refers nebulously to the latter kind of individual he has in mind as “busybodies”, but he does specify precisely “the places where they spend their time”: “courts, councils, marketplaces, assemblies – in short, every kind of meeting or reunion of thoughtless people”. Philo immediately contrasts the ‘busybodies’ and ‘thoughtless people’, and the places in which he says they spend their time, with people who “contemplate nature and everything found within her: they attentively explore the earth, the sea, the air, the sky, and every nature found therein. In thought, they accompany the moon, the sun, and the rotations of the other stars, whether fixed or wandering”.

Partly apparent right from the outset of the Philo extract, therefore, is a broad dichotomy: on one side of the divide, “courts, councils, marketplaces, assemblies” – all of which can be tentatively associated with aspects of the Promethean context established in Chapters 3 and 4, specifically in the instances of Capitalism (*marketplaces, councils, assemblies*) neoliberal Democracy (*courts, councils, assemblies*), and Christianity (*courts, assemblies, councils*) – while on the other side of the divide can be found ‘contemplators of nature’. The ‘contemplators of nature’, from what has been seen so far from Philo, partake in activities resonating with at least some aspects of the Orphic context established throughout this study, specifically regarding the sense of ‘observing nature’ (Philo’s words) – for example, the following were heavily involved in ‘observing nature’ in some important ways: permaculture, morphic resonance, older cultures, Hancock’s ‘lost’ civilisation, Eisenstein’s sacred economy, and the Zeitgeist Movement’s resource-based-natural-law-economy. Attention must here explicitly be drawn to the fact that in Science – one of the areas of ‘Promethean focus’ in Chapter 3, where some ideological precursors to the ecological crisis were examined – nature is also observed, but in the Promethean context, Science, together with Technology, has largely been used in the mechanical sense⁵⁰¹ of formulating methods to extract from the ‘standing reserve’ of nature various resources solely for human use, at an immense cost to nature – see Chapters 1, 2 and 3; and more about this issue follows shortly, specifically when instrumental value is contrasted with inherent value, the latter of which (as I will show) is the domain of Philo’s ‘contemplators of nature’. Nevertheless, the initial part of the Philo passage is immediately instructive, if somewhat indirectly so: stay away from courts, councils, marketplaces, assemblies, the tentative arenas of the Promethean, and instead observe nature. Observation of nature (without immediately acting upon

499 Hadot points out that this passage is “inspired by Stoicism” (1995:264).

500 Philo’s emphasis.

501 ...coterminous here with the notion of ‘applied Science’.

nature for whatever reason) does not involve any kind of action, whereas courts, councils, and assemblies, due to the sheer logistics of such arenas, requires an imposition on nature (the 'hardware' of these places comes from nature), while in marketplaces there occurs the for-profit sale or exchange of resources or goods sourced from nature.

The passage by Philo quoted by Hadot (1995:264-265) continues for another few sentences in much the same manner, expounding on some features of the 'contemplators of nature', describing them as "citizens of the world" and "companions of wisdom"; "they have received their civic rights from virtue, which has been entrusted with presiding over the universal commonwealth" – the resonance here with the diverse organisations traced in Hawken's *Blessed Unrest*, as well as with some aspects of Eisenstein's sacred economy, is again notable, because in these Orphic arenas people have worked to protect the commonwealth, among other aims. The commonwealth has, on the other hand, been subject to systemic dismantling in the context of a Democracy hijacked by Capitalist Business interests – see Chapters 3 and 4 for more information on this phenomenon. Clearly then, a dichotomy is evident in the background of Philo's sentiments, a dichotomy with some tenable initial links to the nature of the Prometheus-Orpheus divide, and Philo is clearly elevating the Orphic over the Promethean.

The Philo extract next raises a theme that has not yet been encountered explicitly in this study. This theme will broadly be referred to as the theme of *inner peace*. Hadot (1995:274) employs this phrase later on in the essay: "To be sure, there is an equilibrium – almost impossible to achieve – between the inner peace brought about by wisdom, and the passions to which the sight of the injustices, sufferings, and misery of mankind cannot help but give rise". Note for now the dichotomy apparent in the extract: "inner peace" versus "the passions to which the sight of the injustices, sufferings, and misery of mankind cannot help but give rise" – this idea will be elaborated upon later in this Chapter. Here is an initial indication of the specified meaning of 'inner peace' (1995:264) as Philo depicts it; it pertains to people "who are *in training for wisdom*, leading a blameless, irreproachable life...". They are accustomed

no longer to take account of physical discomforts or exterior evils, and they train themselves to be indifferent to indifferent things; they are armed against both pleasures and desires, and, in short, they always strive to keep themselves above passions... they do not give in under the blows of fate, because they have calculated its attacks in advance. ... It is obvious that people such as these, who find their joy in virtue, celebrate a festival their whole life long. ... But if only people everywhere felt the same way as this small number, and became as nature meant for them to be: blameless, irreproachable, and *lovers of wisdom*, rejoicing in the beautiful just because it *is* beautiful, and considering that there is no other good besides it... They would know nothing of the things that cause grief and fear, but would be so filled with the causes of joy and well-being that there would be no single moment in which they would not lead a life full of joyful laughter; indeed, the whole cycle of the year would be a festival for them.

One initial observation in light of the extract is that the latter part thereof does contain concepts ostensibly alien to the themes and issues encountered in this study so far – especially insofar as conceptually the focus is explicitly on inner peace, and 'joy' associated with wisdom, an imperviousness to "the passions" and to 'changing circumstances' – these themes were not encountered during Chapters 1 to 6. Furthermore, the description of people knowing "nothing of the things that cause grief and fear" seems out of place considering that "grief and fear" do not necessarily seem like incompatible reactions to knowledge of the ecological crisis (Chapter 1), its direct physical causes (Chapter 2), the ruthlessness of some of the dominant attitudes underlying

ecologically harmful action (Chapter 3), and the perpetuation mechanisms of these ideologies (Chapter 4) – to put it bluntly, these are serious ‘issues worth worrying about’, issues warranting a ‘rousing of the passions’ (to use Hadot’s expression) considering the extent to which life on earth is having the natural conditions for its survival destabilised by these ‘issues’. I will re-approach this theme of inner peace later on.

On closer inspection, however, there are two more areas of conceptual overlap between the latter part of Philo extract (most recently quoted) and the contents of this study. First, when Philo describes ‘lovers of wisdom’ as people who rejoice “in the beautiful just because it *is* beautiful”, and that they consider “that there is no other good besides it”, the concept of inherent value is foregrounded. Inherent value is the opposite of instrumental value; instrumental reason (synonymous with operational and utilitarian thinking) was explored in Chapter 3 in the analysis of Technology as it developed under the Promethean paradigm. Inherent value can be aligned with the Orphic, in the sense of ‘a thing’ being valued not because it is *useful to people* (i.e. its utilitarian value), but because it is valuable in its own right. It is clear that the inherent/instrumental approaches to valuing things are dichotomous – Philo seems to be aligning ‘the wise’, ‘the joyful’, and ‘inner peace’ with at least one aspect of what has been identified with ‘the Orphic’ in this study, namely inherent value. Indeed, Philo *causally links* ‘inner peace’ with the ‘inherent approach’ to value: to re-quote – “*lovers of wisdom*, rejoicing in the beautiful just because it *is* beautiful, and considering that there is no other good besides it... would know nothing of the things that cause grief and fear, but would be... filled with the causes of joy and well-being...”. The causal link here may be that the ‘approach to value as inherent’ (already aligned with the Orphic) is something generating ‘inner peace’. I will come back to this theme later on in this chapter, but for now I will point out that Philo clearly associates the blameless and irreproachable life (and here I will add emphasis on the context of the ecological crisis) with the approach of inherent value.

A final brief observation with regard to the Philo extract is that at the very end of it, he mentions the “cycle of the year”; awareness of cycles was aligned with ‘the Orphic’ in Chapter 5 and with permaculture-practice in Chapter 6, so again (in this instance of the awareness of cycles) it would not be unreasonable to suggest here that Philo’s observations about ‘the wise’ and ‘the joyful’ can be aligned with ‘the Orphic’.

7.3.1.4 Philosophy as a way of life is Orphic: Hadot’s analysis

Following the introductory Philo passage, Hadot immediately uses the appellative phrase of the essay: during “the Hellenistic and Roman eras”, “philosophy was a *way of life*” (1995:265 – Hadot’s emphasis). Hadot continues: “philosophy was a mode of existing-in-the-world, which had to be practiced at each instant, and the goal of which was to transform the whole of the individual’s life”. Michel Foucault, in *The Care of the Self* (1986), also identifies in Hellenistic and Roman times a philosophical focus on transformation: “The common goal of [the] practices of the self... can be characterized by the entirely general principle of conversion to self” (1986:64). However, Hadot (1995:206-212) disagrees with Foucault that the conversion is towards ‘the self’: “It seems to me, however, that the description M. Foucault gives of what I had termed ‘spiritual exercises’, and which he prefers to call ‘techniques of the self’, is precisely focused too much on the ‘self’, or at least on a specific conception of the self”. Instead, Hadot emphasises the aspect of the transformation where

interconnection is central, as evident in the following: “In my view, the feeling of belonging to a whole is an essential element: belonging, that is, both to the whole constituted by the human community, and to that constituted by the cosmic whole” (Ibid). I will continue to unravel the nature of the transformation as I progress through *Hadot’s analysis* of philosophy as a way of life rather than Foucault’s, because Hadot’s analysis (as I will argue) clearly reveals the Orphic character of philosophy as a way of life.

Hadot (1995:265) identifies in the word “philo-sophia” something of the ancient’s conception of philosophy: love of wisdom. This may seem a very simplistic conception of the domain of philosophy, indeed a conception often taught to first-year philosophy students in their first philosophy lecture⁵⁰². However, wisdom is a notoriously elusive quality, something the ancient philosophers were intimately aware of: philosophy “took on the form of an exercise of the thought, will, and the totality of one’s being, the goal of which was to achieve a state *practically inaccessible to mankind: wisdom*” (Ibid; my emphasis). If the goal of philosophy for the Roman and Hellenistic philosophers was a state practically inaccessible to humankind, then they were undertaking something of a paradoxical endeavour, which indeed is confirmed by Hadot (Ibid): both “the grandeur and the paradox of ancient philosophy are that it was, at one and the same time, conscious of the fact that wisdom is inaccessible, and convinced of the necessity of pursuing spiritual progress”. Regarding the word ‘spiritual’ here, it does not denote that which is denoted in later religious ideologies (along the lines of a ticket to Heaven in the afterlife), but for the ancients denoted *a transformed way of living* – philosophy “was a method of spiritual progress which demanded a radical conversion and transformation of the individual’s way of being” (Ibid) – and wisdom is an essential part of this ancient philosophical process: “real wisdom does not merely cause us to know: it makes us ‘be’ in a different way” (Ibid). So wisdom, philosophy, and spiritual progress are interlinked in the context of ancient philosophy, the result being a transition I have already commented on in previous sub-sections, specifically a transition from an instrumental use of reason to an application of reason where inherent qualities of existence are foregrounded. Furthermore, wisdom may be an elusive quality, difficult (if not impossible) to measure, but the effect of wisdom is perhaps something measurable – drawing on what has been seen so far from Hadot’s analysis, the demonstrable effect may be *the transformation a person undergoes* in the process of seeking wisdom; I explicitly address the nature of this transformation later on in this chapter, but glimpses of it are seen throughout. Additionally, Orphic characteristics of philosophy as a way of life have already been identified in 7.3.1.3, so the transformation a person undergoes carries a consequence of an ecologically-aware and sensitive state of being, even if Philo and Hadot do not use these exact words or phrases. This is a crucial point to emerge from my line of inquiry: that the transition involved in making ‘philosophy a way of life’ is marked by ecologically-sensitive, Orphic qualities and actions. It should be apparent that these are qualities and actions that are fundamentally different from those of the Promethean project that has culminated in ACID. I will continue to explore Hadot’s analysis with a view to revealing such Orphic qualities and actions associated with making philosophy a way of life.

Hadot (1995:265-266) continues: wisdom “was a way of life which brought peace of mind (ataraxia), inner freedom (autarkeia), and a cosmic consciousness. First and foremost, philosophy presented itself as a therapeutic, intended to cure mankind’s anguish” (1995:265-266). Note that wisdom, in the context of philosophy as a way of life, does not denote a state of ‘knowing everything’; quite

502 I make this comment in light of a decade of teaching or lecturing philosophy to students.

contrarily, wisdom in this context is “a way of life” with specific characteristics: a way of life where the practitioner manifests “peace of mind”, “inner freedom” (or inner peace), and “cosmic consciousness” – and in this manner “mankind’s anguish” is cured. I will address the themes of peace of mind and inner freedom/peace, as well as the cure of “mankind’s anguish”, chronologically in this chapter. Hadot touches upon the idea of cosmic consciousness first. In the following, he (1995:266) paints the ancient philosophical endeavour, which is to say an endeavour to live in a manner whereby wisdom can be accommodated as a way of life, with brushstrokes of inherent value, quoting Xenocrates and Epicurus (Ibid): “We must not suppose that any other object is to be gained from the knowledge of the phenomena of the sky ... than peace of mind and a sure confidence” – note here the lack of an immediate conclusion regarding what a person should do with the objects constituting their environment; there is not even a hint of instrumentality here. Furthermore, rather than have dominion over the non-human world, the ancient philosophical disposition is one wherein human beings are seen as part of the cosmos: by “‘cosmic consciousness’, we mean the consciousness that we are a part of the cosmos, and the consequent dilation of our self throughout the infinity of universal nature” (Ibid). These ideas speak directly for the Prometheus/Orpheus dichotomy I have developed in this study, aligning philosophy as a way of life with the Orphic attitude. I have already quoted Philo saying that lovers of wisdom observe nature for the inherent value of nature, and in the above extracts the same sense of inherent value comes through: “We must not suppose that any other object is to be gained... than peace of mind and a sure confidence”. This outcome may, for now, seem Promethean due to the human being ‘benefiting’ via this relationship between herself and the cosmos, but the definition of cosmic consciousness in the above extract immediately re-positions the human being on a ‘horizontal’ platform of being: “the consciousness that *we are a part of the cosmos*, and the consequent dilation of our self throughout the infinity of universal nature” (my emphasis) – this may as well be an Orphic slogan. In sub-section 7.3.1.7 it will become even clearer that this outcome of peace of mind or inner peace is anything but a selfish anthropocentric goal. In fact, it is commensurate with what is today called ‘posthumanism’ (Braidotti 2013), or the growing awareness – in the light of discoveries in the biological sciences, among others – that humans are not the centre of the universe, but exist instead on a spectrum of intelligent life forms.

The centralisation of cosmic consciousness in the context of philosophy as a way of life is focused on again by Hadot (Ibid), who quotes Epicurus’ disciple Metrodorus on this important point: “Remember that, although you are mortal and have only a limited life-span, yet you have risen, through the contemplation of nature, to the infinity of space and time, and you have seen all the past and all the future”; and also Marcus Aurelius: “The rational soul ... travels through the whole universe and the void that surrounds it ... it reaches out into the boundless extent of infinity, and it examines and contemplates the periodic rebirth of all things”. After quoting Metrodorus and Marcus Aurelius, Hadot (Ibid) makes another observation reinforcing philosophy as a way of life as being considerably Orphic in character: “At each instant, the ancient sage was conscious of living in the cosmos, and he placed himself in harmony with the cosmos” (Ibid). Being *in harmony with the cosmos* – this is a powerful phrase, another slogan for the Orphic attitude. And this notion – of philosophy as an *Orphic* way of life – appears later on (1995:273) in Hadot’s essay again:

Philosophy in antiquity was an exercise practiced at each instant. It invites us to concentrate on each instant of life, to become aware of the infinite value of each present moment, once we have replaced it within the perspective of the cosmos. The exercise of wisdom entails a cosmic

dimension. Whereas the average person has lost touch with the world, and does not see the world qua world, but rather treats the world as a means of satisfying his desires, the sage never ceases to have the whole constantly present to mind. He thinks and acts within a cosmic perspective. He has the feeling of belonging to a whole which goes beyond the limits of his individuality.

I have made my point and supported it with numerous references to Hadot's text, and Hadot in turn referenced ancient philosophers: philosophy as a way of life resonates with the Orphic attitude, especially insofar as philosophy as a way of life is a manifestation of cosmic consciousness where the human being is an interconnected part of an intricate whole, each part of which is inherently valuable. And this message resonates with the Orphic attitudes explored in Chapter 5, and in Chapter 6 permaculture was shown to be a design system largely premised on the notion of interconnection. Perhaps now Mollison's use of the phrase, 'philosopher-gardeners', quoted in Chapter 6, makes a lot more sense.

In the most recent observations I have quoted from Hadot, attention is drawn to two kinds of perception of the world. One is glimpsed in the phrase "the average person... treats the world as a means of satisfying his desires" – this treatment of the world is predicated on an instrumental approach to 'objects' in the cosmos, an approach that has been equated with the reduction of nature into a standing reserve of resources to be dissected for human purposes, which is part of the Promethean approach to the cosmos (see Chapter 3). The other relationship to the world to which Hadot refers – thinking and action "within a cosmic perspective" – is respectful of the synergy of the totality that is the cosmos and all its diversity. Hadot (1995:273-274) does further address some differences between these two perspectives in the chapter *Philosophy as a Way of Life*, but I find that some of his comments from the chapter *The Sage and the World*⁵⁰³ to address the differences in a manner that resonates appropriately with concepts that have already been encountered in this study so far. Attention to these differences furthermore is useful in gearing up to discussing further the nature of the transformation relevant to philosophy as a way of life, a transformation that I will argue is immensely powerful for the individual and the 'collective ecological organism' in the context of the ecological crisis.

7.3.1.5 The Sage and the World: Habitual perception and Philosophical perception

In *The Sage and the World*, Hadot (1995:253-254) makes reference to two methods of perceiving the world, the first of which I here consider, namely *habitual perception*. Habitual perception is, in my reading of the concept, similar to the concepts of *humanity as it has been historically constituted* as well as *the established model of reality* already discussed in sub-section 7.2.2.10. Hadot (1995:254) quotes Bergson to convey the character of habitual perception:

Life requires that we put on blinkers; we must not look to the right, to the left, or behind, but straight ahead, in the direction in which we are supposed to walk. In order to live, we must be selective in our knowledge and our memories, and retain only that which may contribute to our action upon things.

To repeat, this is one manner of perception where human beings retain knowledge *which may contribute to our action upon things*, and Hadot (Ibid) refers to it as "utilitarian perception", which

503 'The Sage and the World' is chapter 10 while 'Philosophy as a Way of Life' is Chapter 11.

resonates with Horkheimer's *instrumental* and *subjective* reason (raised in Chapter 3, sub-section 3.3), as well as Marcuse's *operational* thinking (Chapter 4, sub-section 4.4). Hadot also says (Ibid) of this habitual perception of the world that it "hides from us the world qua world", and that this is "the state of unconsciousness in which man normally lives". Operational thinking, instrumental Reason, and subjective Reason have in this study been shown to be paradigmatic features of *the established model of humanity* and *humanity as it has been historically constituted*, which I have also shown to be Promethean. Therefore, in the same way that *the established model of humanity* and *humanity as it has been historically constituted* are Promethean (as I argued in 7.2.2.10), so too is the concept of *habitual perception*. It may be objected that, should the Orphic approach supplant the Promethean at any time, it would in turn become the basis for 'habitual perception'. This would ignore the fact, however, that 'habitual' would necessarily mean something completely different in an Orphic context, because the latter amounts to a way of life that precisely does *not* 'put on blinkers' and does *not* look 'straight ahead', but is marked by constant circumspection because of its awareness of ecological interconnected-ness.

Hadot (Ibid) again quotes Bergson to contrast habitual perception to a different kind of perception: "When [people] look at a thing, they see it for itself, and no longer for them. They no longer perceive merely for the sake of action: they perceive for the sake of perceiving; that is, for no reason, for the pure pleasure of it...". Perception of a thing "for itself" is here a description of an Orphic quality – this kind of perception brings to the forefront the inherent value of a thing. This kind of perception resonates with Horkheimer's notion of *objective reason*, as well as what Vetlesen referred to as *deictic discourse* – I touched on both concepts in Chapter 3, sub-section 3.3. On the other hand, perception of an object "for them" (i.e. for people) prioritises its instrumental value, generally a Promethean form of perception. It is at this stage of Hadot's exploration of these concepts – habitual perception; perception of the world *for itself* versus *for people* – where he begins to suggest what the role of philosophy is, a role with immediate consequences for human actions propelling the ecological crisis: "Philosophy, for its part, deepens and transforms habitual perception, forcing us to become aware of the very fact that we are perceiving the world, and that the world is that which we perceive" (1995:253). The rest of the Bergson quote (Ibid) indeed offers support for Hadot's view: "Might not the role of philosophy be to bring us to a more complete perception of reality, by means of a kind of displacement of our attention?" The displacement Bergson mentions is a displacement from habitual perception, from perception of the world 'for ourselves', to perception of the world 'for itself'. Here Hadot (1995:254) sums up his reading of the role of philosophy in light of some of these concepts:

The 'displacement of attention' of which Bergson speaks... is in fact a conversion: a radical rupture with regard to the state of unconsciousness in which man normally lives. The utilitarian perception we have of the world, in everyday life, in fact hides from us the world qua world. Aesthetic and philosophical perceptions of the world are only possible by means of a complete transformation of our relationship to the world: we have to perceive it *for itself*, and no longer *for ourselves*.

Again, this dichotomy between perception of the world 'for itself' versus perception of the world 'for ourselves' is a different way of saying perception of something for its inherent value versus perception of something for its instrumental value, which again is to say aspects of Orphic perception versus aspects of Promethean perception. I have shown in this study that Promethean attitudes have historically dominated the world and culminated in ACID (Chapter 3); that this has

propelled the construction of now-ubiquitous Promethean industries (Chapter 2), which have in turn directly caused the ecological crisis (Chapter 1). But now I have also just shown that, as an outcome of Hadot's analysis, the role of philosophy is intertwined with the transformation of perception, a transformation of perception away from habitual perception towards cosmic consciousness, from a Promethean state towards an Orphic state. This transformation is obviously relevant to the context of the ecological crisis: the crisis has arisen from direct human actions and industries propelled by Promethean attitudes and endeavours, at the exclusion and suppression of Orphic attitudes, actions and endeavours. Orphic endeavours come from a place of valuing 'objects', the world, and nature 'for themselves', which certainly entails a different kind of human action (indeed, interaction, and very often a contemplative inaction) in the world. Philosophy according to Hadot, as I have started to show, entails a conversion from the one type of perception (perceiving the world 'for ourselves'/instrumentally valuing 'objects'/habitual perception) to the other (perceiving the world 'for itself'/inherently valuing 'objects'). Importantly, the Roman and Hellenistic philosophers were often engaged in a way of life where this kind of perception was sought – as I have already shown in sub-sections 7.3.1.3 and 7.3.1.4, this quest for the transformation from one state to the other partly constituted the quest for wisdom. I think it is safe to say, then, that wisdom in the context of philosophy as a way of life is sure to be absent when the utilitarianism of habitual perception is the exclusive focus of a human being; ACID is utilitarianism and instrumentalism writ large, and accordingly (to put two and two together here) lacks the quality of wisdom as denoted in the context of philosophy as a way of life. On the other hand, a person engaged in observation of nature, of themselves, of their interactions, and so on, is actively disrupting the 'Business-as-usual' of habitual utilitarian perception, is actively breaking the Promethean cycle of perception 'for ourselves', and instead treads cautiously in an environment endowed with inherent value. Motivated by the 'for-itself', the Orphic initiate minimises the impact of the 'for-ourselves' attitude to the world and exists so that the world 'for-itself' is allowed to manifest unimpeded by the utilitarian-instrumentalist Promethean paradigm so definitive for ACID.

7.3.1.6 On philosophical transformation

I have shown in sub-section 7.3.1.5 that Hadot, via support from Bergson⁵⁰⁴, sees the role of philosophy as being the facilitation of a transformation away from *habitual perception* where the world, nature and 'objects' are considered valuable because of their use-value (instrumental value) for human beings, to a different way of perceiving the world where 'objects' are perceived as being inherently valuable. It is with this transformation in mind that Hadot (1995:274) turns towards ancient philosophical traditions: he makes this turn because, he claims, "[a]ncient philosophical traditions can provide guidance in our relationship to ourselves, to the cosmos, and to other human beings" (I would add to the well-being of the ecology of the planet, on which human beings rely for every aspect of their physical existence). I have already shown in 7.3.1.3, 7.3.1.4, and 7.3.1.5 that philosophy in the Roman and Hellenistic periods was explicitly in alignment with the Orphic attitude, that is, when philosophy was *a way of life* and not purely discourse about philosophy (see 7.3.1.2);

504 ...and also via support from Husserl and Merleau-Ponty; however, I have not found it necessary to include what Hadot quoted from them as I have managed to maintain my desired focus without including their comments. Suffice to say that it stands to reason that these two philosophers would support Hadot's line of thought because they are phenomenologists. And as every practitioner of philosophy should know, phenomenology is premised on 'letting things speak for themselves', instead of foisting one's own 'very human' prejudices and needs on them.

and that gradually philosophy became less a way of life and more a discursive activity confined within the walls of the university. This shift occurred (as seen in 7.3.1.2) with the increasing dominance of Christianity, Science, Technology and Capitalism – all Promethean, all predicated on instrumental reason and the reduction of nature into objects ‘for ourselves’, and all of these (being dominant shapers of discourse for centuries, at the exclusion and often negation of incompatible ideas and attitudes) constitute the established model of humanity, and they propel habitual perception. Philosophy, as seen in 7.3.1.5, has been associated with a movement away from habitual perception, away from the established model of humanity, which is to say away from the Promethean attitude. I must insist on this point: the transformation focused on by Hadot via Bergson is away from the Promethean and towards the Orphic – Bergson, as I have already quoted, saw philosophy as facilitating the transformation away from perception of the world ‘for ourselves’ to ‘for itself’; and here is Hadot (1995:257) linking this characteristic of philosophy to the ancient philosophers: there “have existed exercises by means of which philosophers have tried to transform their perception of the world, in a way analogous to... the conversion of attention spoken of by Bergson”. What Bergson and Hadot are interested in, then, is a transformation of perception, from the ‘for ourselves’ to the ‘for itself’ as discussed at some length already – a transformation Hadot recognises as crucial in light of philosophy as a way of life as practiced by ancient philosophers.

Some of these themes – transformation, wisdom, seeing the world-as-world – are at play in the following sentiments from Seneca, quoted by Hadot (1995:257): “As for me, I usually spend a great deal of time in the contemplation of wisdom. I look at it with the same stupefaction with which, on other occasions, I look at the world; this world that I quite often feel as though I were seeing for the first time”. Hadot (Ibid) comments on Seneca’s sentiment as follows:

If Seneca speaks of stupefaction, it is because he sometimes finds that he discovers the world all of a sudden, "as though [he] were seeing it for the first time." At such moments, he becomes conscious of the transformation taking place in his perception of the world. Normally, he had not been in the habit of seeing the world, and consequently was not astonished by it. Now, all of a sudden, he is stupefied, because he sees the world with new eyes.

Hadot’s observations here are very useful for helping one make sense of the character of philosophy as a way of life as I started to trace the concept in the sub-sections since 7.3.1.2. Adding to what was said about philosophy in those sub-sections, the characteristic of ‘seeing the world anew’ is now added to the list. It is a manner of perception remarkably Orphic in attitude – this is thoroughly reinforced by these sentiments from Lucretius when describing “how the world would look to us if we saw it for the first time” quoted by Hadot (1665:258):

First of all, the bright, clear colour of the sky, and all it holds within it, the stars that wander here and there, and the moon and the radiance of the sun with its brilliant light; all these, if now they had been seen for the first time by mortals, if, unexpectedly, they were in a moment placed before their eyes, what story could be told more marvelous [sic] than these things, or what that the nations would less dare to believe beforehand? Nothing, I believe; so worthy of wonder would this sight have been.

The profound respect and admiration for nature is foregrounded in this quote, as is the vibrant beauty of being alive and capable of experiencing the ‘world qua world’. In order to be able to have such experiences (and accordingly, to be able to practice philosophy as a way of life), “we must separate ourselves from the ‘everyday’ world in order to rediscover the world qua world” (Hadot 1995:258) – again the distinction between the two ‘worlds’ is clear, as is the distinction between the

Orphic attitude and the Promethean attitude. The ‘everyday’ world, is, of course, the world shaped by utilitarian, instrumental, and habitual perception, and what Marcuse referred to as the ‘operational point of view’ (see Chapter 4, sub-section 4.4), so the separation Hadot speaks about is a separation from the world of the Promethean, hence my insistence that the Prometheus/Orpheus dichotomy is relevant to the dichotomy of the ‘for ourselves’/‘for itself’ that has become so central in this exploration of philosophy as a way of life. At this stage of the study it is clear that seeing the world for ourselves, which is to say seeing it instrumentally or in a purely utilitarian and instrumental manner, indeed partly characterises the attitude that brought on the ecological crisis as I depicted it in Chapters 1 and 2, while the view of the world for itself promotes a way of being where human action is aligned with the well-being of the non-human world.

I will now turn my attention more specifically to the exercises practiced by ancient philosophers, practices whereby the world was focused on ‘for itself’, practices which produce moments in which an Orphic ‘state of presence’ is achieved. This state of presence, in turn, produces important moments when the individual, in contemplation of nature and the individual’s interconnection with nature, temporarily breaks the cycle of Promethean ‘Business as usual’ (which has been identified as instrumental in the causes of the ecological crisis) and experiences something of the cosmic unity of Being. Aspects of this ‘presence’ are then maintained in the perception of the individual, encouraging Orphic *interactions* between human being and nature rather than purely habitual Promethean *action upon* nature – this is a key aspect of the transformation a person can undergo if s/he wishes to work towards inner peace *and* ecological sensitivity in his or her own life.

7.3.1.7 On the Orphic theme of inner peace

I mentioned the theme of inner peace early on in my exposition of philosophy as a way of life, specifically when I quoted Hadot on “the inner peace brought about by wisdom” (1995:274) in light of remarks made by Philo. The notion of inner peace being Orphic in character is perhaps, upon initial consideration, a non-sequitur. Inner peace may seem associated with a selfish process of looking inwards and a ‘forgetting’ about the natural world, while the Orphic attitude highlights (amongst many things) the interconnectedness of all that constitutes nature. The context of the ecological crisis, as I have also already remarked in 7.3.1.3, is one that creates an atmosphere of urgency, specifically an urgency to try and deal with the considerable issues constituting an ecological crisis with such widespread implications for life on planet Earth. So inner peace may not seem an important goal when the need to create a sustainable dispensation is of such obvious importance.

However, Hadot makes it perfectly clear that the “inner peace brought about by wisdom” (1995:274) is nothing other than an immediate and active respect for the united synergy of all of the components that constitute the present moment – this of course requires that a person has undergone a transformation away from pure Promethean utilitarianism, instrumentalism, and of seeing the world ‘for ourselves’, towards something far more conducive to the well-being of the environment. Hadot draws explicit attention to the un-selfish character of what is here being referred to as inner peace:

What is required is concentration on the present moment, a concentration in which the spirit is, in a sense, without past nor present, as it experiences the simple ‘sensation of existence.’ Such concentration is not, however, a mere turning in upon oneself. On the contrary: the sensation of

existence is, inseparably, the sensation of being in the whole and the sensation of the existence of the whole. (259)

For this reason, the ancients did various exercises (none of which entail any kind of Promethean action) to cultivate a state of mind conducive to 'being in the whole': "In order to realize this state of attention, ...a number of exercises were necessary: intense meditation..., the ever-renewed awareness of the finitude of life, examination of one's conscience, and, above all, a specific attitude toward time" (Hadot 1995:268). This attitude towards time entails an acute awareness of the (Orphic) interconnectedness of the present moment:

For the ancients... it is quite apparent that the transformation of one's view of the world was intimately linked to exercises which involved concentrating one's mind on the present instant. In Stoicism as well as in Epicureanism, such exercises consisted in 'separating oneself from the future and past,' in order to 'delimit the present instant.' Such a technique gives the mind, freed from the burden and prejudices of the past, as well as from worry about the future, that inner detachment, freedom, and peace which are indispensable prerequisites for perceiving the world qua world. We have here, moreover, a kind of reciprocal causality: the mind acquires peace and serenity by becoming aware of its relationship with the world, to the extent that it re-replaces our existence within the cosmic perspective. (Hadot 1995:259)

This is a most important extract. It reveals that inner peace is not sought because of some selfish goal, but rather because inner peace is an "indispensable" prerequisite "for perceiving the world qua world", a form of perception where the inherent value of the constituents of existence is central. It also reveals the secret to inner peace as the ancient philosophers understood inner peace: not to have the mind 'hijacked' by the habituated form of perception (a form of perception dominated by humanity as it has historically been constituted) where the mind is constantly replaying past events or speculating about the future, and in so doing missing the present moment. This is fitting for the Promethean attitude: in being instrumentally focused, it homes in on those parts of an environment that can be used 'for ourselves', but accordingly 'we' must actively engage in 'logistics' about what to do *in the future* with the 'resources', how to go about processing the resources, etc.; and of course, 'we' need to draw on past events, experiences, customs, habits, structures, and so on, in order to guide 'our' future choices. An instance of this is what is heralded as the new industrial revolution, namely 'the internet of things'⁵⁰⁵, in which all industrial objects and people will be digitally 'interconnected' in the most invidious way to exacerbate production and, concomitantly, ecological degradation, thus taking Deleuze's 'control society' (see Chapter 4, sub-section 4.6) to an unprecedented level. 'The internet of things' is also being heralded as the greatest investment opportunity of all time⁵⁰⁶, where the investment process occurs seemingly in Promethean celebration of the Capitalist medium of 'the market' (see sub-sections 2.9 and 3.5). This kind of habitual perception, and perception 'for ourselves' (where focus on the future or past for practical and instrumental reasons is foregrounded), corresponds to something Martin Heidegger says in his essay 'On the essence of truth'⁵⁰⁷: humanity

replenishes its 'world' on the basis of the latest needs and aims, and fills out that world by means of proposing and planning. From these man then takes his standards, forgetting being as a whole. He persists in them and continually supplies himself with new standards, yet without considering either the ground for taking up standards or the essence of what gives the standard.

505 https://en.wikipedia.org/wiki/Internet_of_things accessed 5 March 2017

506 <https://pro.banyanhill.com/p/PRLPRA/LPRLT251/?h=true> accessed 5 March 2017

507 Accessed 5 March 2017 at <http://aphelis.net/wp-content/uploads/2011/02/Martin-Heidegger-On-the-Essence-of-Truth.pdf>

On the other hand, there is the remembering of being⁵⁰⁸, the concentration “on the present instant” which involves “suspension of our projects for the future” (as already quoted from Hadot, above) – suspension of activities like the creation of, and the investment into, ‘the internet of things’. Note the importance of his statement in light of the ecological crisis – the crisis has been brought on by Promethean processes such as the widespread domination of Christianity in the ‘developed world’, the spread of reductionist Science, the acceleration of the spread of ‘dominion-Technology’, and the endless-growth imperative of Capitalism. The latter three of these Promethean arenas have continued to spread and grow, with a view to spreading and growing continuously into the future⁵⁰⁹ – but as just seen, concentration on the present moment entails “the suspension of our projects for the future” – which is to say, the suspension of Promethean projects for the most part, insofar as the Promethean is intimately inculcated with instrumental reason and value, and with habitual perception. It is this Promethean burden that one is freed from when concentration on the present moment is prioritised; as already quoted, it frees one from the “burden and prejudices of the past, as well as from worry about the future”, and it “lets us discover the infinite value and unheard-of miracle of our presence in the world” (Hadot, *Ibid*). These are surely worthy constituents of a state that is here being referred to as inner peace, and it is a state in which no Promethean phenomena are being perpetuated by the person nurturing the state of perception, a state of perception that lingers on to influence one towards benign interactions (instead of ecologically-destructive actions) in an interconnected system.

This state of inner peace is repeatedly described by Hadot as a state in which a profoundly Orphic attitude is nurtured. Here is one instance of this (Hadot 1995:260):

By becoming conscious of one single instant of our lives, one single beat of our hearts, we can feel ourselves linked to the entire immensity of the cosmos, and to the wondrous fact of the world's existence. The whole universe is present in each part of reality. For the Stoics, this experience of the instant corresponds to their theory of the mutual interpenetration of the parts of the universe.

It follows that people who have “suspended their projects for the future”, who feel “linked to the entire immensity of the cosmos”, who are aware of the “wondrous fact of the world's existence”, who see the “whole universe... present in each part of reality”, who comprehend “the mutual interpenetration of the parts of the universe”... these people are unlikely to lead the way in exerting dominion over the natural world – that is, beyond that which is necessary for their own survival. Of course, such people would have to act; they would have to focus on some utilitarian outcomes, have to have some projects for the future, because life certainly requires that people eat food and maintain shelter. However, consider again what Lyn White Junior (1971:11) has said (which I have already quoted more than once in this study): “What people do about their ecology depends on what they think about themselves in relation to the things around them”. The people I have just described in Orphic detail (details provided by Hadot) certainly would have minimal detrimental impact on the natural world, because they feel themselves “linked to the entire immensity of the cosmos”. The same logic applies to the following:

⁵⁰⁸ Heidegger associates this with what he calls ‘letting-be’, which I comment on in the conclusion to this chapter.

⁵⁰⁹ ...which of course is impossible because infinite expansion cannot occur on a finite planet, as discussed in Chapter 3 and elsewhere in this study.

By concentrating one's attention on one instant, one moment of the world: the world then seems to come into being and be born before our eyes. We then perceive the world as a 'nature' in the etymological sense of the world: physis, that movement of growth and birth by which things manifest themselves. We experience ourselves as a moment or instant of this movement; ... We are born along with the world. (Hadot 1995:260)

The sense conveyed here is one of deep appreciation for existence, an existence in which the perceiver is intimately interconnected with that which is perceived. It may be possible that a person could perceive the world in such a manner of interconnectedness but still go about acting in an ecologically-detrimental way, but White's comment again comes to mind, and again the overwhelming impression is that what a person thinks about the things around them matters for what the person does 'to' or 'with' the things around them. Indeed, in the following observation from Hadot (1995:261), he is in agreement with the notion that what one thinks affects how one lives, specifically when he mentions "an interior transformation and complete change in his way of seeing *and living*" (my emphasis):

The contemplation mentioned by Seneca is... a kind of unitive contemplation. In order to perceive the world, we must, as it were, perceive our unity with the world, by means of an exercise of concentration on the present moment. Similarly, in order to recognize wisdom, we must, so to speak, go into training for wisdom. We can know a thing only by becoming similar to our object. Thus, by a total conversion, we can render ourselves open to the world and to wisdom. This is why Seneca was just as stupefied and filled with ecstasy by the spectacle of wisdom as he was by the spectacle of the world. For him, in both instances, it was a case of a discovery obtained by dint of an interior transformation and complete change in his way of seeing and living. In the final analysis, both the world as perceived in the consciousness of the sage, and the sage's consciousness itself, plunged in the totality of the world, are revealed to the lover of wisdom in one single, unique movement.

The previous four quotes 'speak for themselves' in conveying the Orphic character of the inner peace that the ancient philosophers nurtured as a matter of priority. In order to nurture this state of perception, the ancient philosophers had to drop their "projects for the future" and abandon (as far as possible) thoughts about the past and worries about the future. They literally had to stop what they were doing, stop any utilitarian process, shake loose their habitual perception of the world, and actively (de-)condition the mind to be aware of the interconnectedness of the present moment. In doing all this, the adept is no longer part of the 'Promethean problem' anymore. In hindsight, the Orphic areas of focus explored in Chapter 5, and the domain of permaculture explored in Chapter 6, are partly characterised by a similar consequence of halting people in their Promethean tracks and working to convey Orphic perceptual qualities partly characterised by an awareness of being a part of a much greater whole.

I am not for a moment suggesting that 'instrumentalism' is a bad thing as such; but as the *dominant* attitude directing the actions of the human race, as is the case with ACID, where an almost exclusive Prometheanism reigns, the Promethean problem is pressing – indeed, Hadot himself comments on this problem when, in *The Veil of Isis*, as I have quoted elsewhere, he writes (2006:98), the "blind development of technology and industrialization, however, spurred on by the appetite for profit, places our relation to nature, and nature itself, in danger". The ancient philosophers, on the other hand, were actively engaged in observing nature, and their observations were not of dislocated quantities of resources; instead, their observations were of themselves and of all manifestations of life as an interconnected piece of the cosmic whole. This, as stated by Hadot again and again, is a state of observation, and a manner of perceiving the world, which have to be practised actively at

each instant. It follows that not only was the ancient philosopher actively stopping Promethean endeavours when she observed in the manner described, but this observational process, in having to be practiced at each instant, continued into each subsequent moment – it is not the present ‘giving way’ to the future, but rather the unfolding of a continuous present tense. So even when the utilitarian need to eat food arises, the person practicing philosophy as a way of life considers (surely amongst many other considerations) the cosmic interconnection of himself and that which he eats, where it comes from, the impact that the farming method has on other parts of the whole, and the impact of the transport system in the world of which the human being is just one part. Eating is a necessity; what one eats, how one eats, where one’s food comes from, what the impact on the ecology of the farming method is – these are all far more likely to be considered by a person actively engaged in careful observation of the unity of the cosmos. A practitioner of philosophy as a way of life, as described in detail at various stages in 7.3.1.1 to 7.3.1.7, is cognisant of this unity, and adjusts actions accordingly.

Please note that I am not arguing for passivity, or a reclusive quest for some kind of inner-peace or enlightenment. Instead, my focus on inner-peace is partly to provide a ‘silver lining’ to the ‘cloud’ that is sometimes the difficult territory of activism geared towards achieving large socio-political and economic changes. As I state and argue elsewhere in this study, the dominant Promethean forces at play in ACID are ones that prevent change, and this can dampen the spirits and dull the motivation of potential activists. The inner peace brought about by practicing philosophy as a way of life is an inherently valuable outcome, unrestricted by the constraints of instrumentalism, and putting Orphic qualities and principles into practice has an effect of fostering inherent value. This is compatible with an emphasis on the need for activism in light of the urgency of action today, but because no human is omnipotent, and activism cannot, therefore, guarantee affirmative results, practicing philosophy as a way of life has the value of reminding one of one’s finitude and fallibility in the face of overwhelming odds (the champions of ACID). Ultimately, however, considering the urgency of action in light of the ecological crisis as traced in this study, the effect of inner peace needs to be part of a ‘package’ of Orphic outcomes, with one such outcome being a broader impact in and on society. The importance of the ‘broader impact’ in the context of philosophy as a way of life is clearly brought to the foreground in Hadot’s views on ‘communitary engagement’, the focus of the following subsection.

7.3.1.8 On communitary engagement

The image so far of the practitioner of philosophy as a way of life, as depicted throughout sections 7.3.1.1 to 7.3.1.7, is mostly of a person carefully considering every moment as a profound fractal of the whole of time and space; a person who actively concentrates on keeping at bay habitual, instrumental, and operational perception from infiltrating their perception of the world-as-world; a person who is participating in the unfolding of the universe without interfering by way of trying to ‘control’ it, a person who accordingly ‘treads softly’ (a deliberate evocation of Princen’s book, *Treading Softly* – see Chapter 4). In 7.3.1.7 I offered a glimpse of the scenario where this person must, for example, engage in the activity of eating; accordingly, he acquires food and eats it, but in a manner that is in conformity with his Orphic ‘convictions’, if I may refer to them as such, rather than in a manner where the individual considers himself ‘Democratically free to consume what he likes,

when he likes, how he likes, and as much of it as he likes', which is an extreme instance of the Promethean attitude, but an instance encountered at an alarmingly high rate in contemporary consumerist society (a society unsurprisingly facing an ecological crisis that it has created under the mis-guidance of exclusive Prometheanism).

My personal experiences with some of these ideas have been 'proof of the pudding', so to speak. Specifically, when stepping back from the focus on replaying and analysing past events, and from speculating or worrying about future events, the outcome has been deeply peaceful. I become aware of my breathing, the air coming into my lungs and out again; the sounds emanating from that which surrounds me; even the beating of the heart, as mentioned in a quote in a recent sub-section. The 'habitual' narrative of the mind can be quieted; awareness of the 'logistical self' can be transferred to an awareness of the 'perceiving self'. Cravings and desires (which are conditioned into people via habits) are noticed, but not reacted to. This is a state I consider to be very conducive for observation: observation of the self, but also observation of what is being perceived. That which is being perceived in this state is not under threat of negation due to the event of this kind of perception. This, as Hadot (1995:274) remarks, is only possible when some of the "tasks which must be kept in mind at each instant" are under 'control': "vigilance over one's thoughts and consent to the events imposed by destiny" (Ibid). All of this does, for me, constitute a state of inner peace.

I would like to continue the personal tone slightly longer, and then return to some important food-for-thought offered by Hadot in closing of the current focus on philosophy as a way of life. The state of inner peace that has often been central in recent sub-sections, and which I have just commented on in a personal capacity, is obviously exceptionally positive as far as personal inner peace is concerned. However, I have had to ponder the extent to which personal inner peace is important in the context of the ecological crisis. I have already suggested more than once that a practitioner in his or her practice of philosophy as a way of life is a) stepping back from ecologically-problematic Promethean actions, and b) goes about the necessities of life aware of the interconnection of all of the cosmos and of the consequences of actions in an interconnected whole. These are obviously important factors to consider in that they are conducive to ecological 'soft-treading'. But it simultaneously seems unlikely that philosophy as a way of life, or its Orphic consequences, will matter much to the proverbial average person, which is to say a person conditioned almost exclusively in the realm of the Promethean, i.e. in ACID – such a person seems unlikely to hear the call of philosophy as a way of life, or if s/he hears it, seems unlikely to do anything about it. However, and reassuringly, I must add that the inner peace associated with philosophy as a way of life is, by itself, not the complete 'story' of the ancient philosophical way of life. Hadot (1995:274) makes it clear that there was a strong "communitary engagement" in the ancient philosophical sphere:

Ancient philosophy required a common effort, community of research, mutual assistance, and spiritual support. Above all, philosophers ... never gave up having an effect on their cities, transforming society, and serving their citizens, who frequently accorded them praise, the vestiges of which are preserved for us by inscriptions. Political ideas may have differed from school to school, but the concern for having an effect on city or state, king or emperor, always remained constant.

Hadot (Ibid) continues – and I must quote the entirety of this extract due to its importance:

... an essential place is accorded to the duty always to act in the service of the human community; that is, to act in accordance with justice. This last requirement is, moreover, intimately linked to the two others. It is one and the same wisdom which conforms itself to cosmic wisdom and to the reason in which human beings participate. This concern for living in the service of the human community, and for acting in accordance with justice, is an essential element of every philosophical life. In other words, the philosophical life normally entails a communitary engagement. This last is probably the hardest part to carry out. The trick is to maintain oneself on the level of reason, and not allow oneself to be blinded by political passions, anger, resentments, or prejudices. To be sure, there is an equilibrium – almost impossible to achieve between the inner peace brought about by wisdom, and the passions to which the sight of the injustices, sufferings, and misery of mankind cannot help but give rise. Wisdom, however, consists in precisely such an equilibrium, and inner peace is indispensable for efficacious action.

So, in nurturing cosmic consciousness and quieting habitual perception (which requires concentration on the present moment), an inherently valuable state of inner peace is achieved, wherein the world can be perceived 'qua world'; this state is necessary for the kind of self-mastery associated with wisdom and reason, which (as seen in the above extract) is "intimately linked" to "the duty always to act in the service of the human community". The inner peace and cosmic consciousness acquired in the practice of philosophy as a way of life then allow for an "equilibrium" to be maintained between "the passions" and inner peace; this equilibrium, as Hadot states, is the domain of wisdom. Interestingly, Hadot ends the above extract with a curious remark: "inner peace is indispensable for efficacious action". I call this curious because it suggests an instrumentality, which makes sense if one re-considers something Hadot (1995:265-266) says, which I have already quoted but must here re-quote: "First and foremost, philosophy presented itself as a therapeutic, intended to cure mankind's anguish". The individual, in practicing philosophy as a way of life as it has been revealed in this chapter, acquires a state of inner peace, thereby 'curing' her own anguish. Added to this first sense of instrumentality is a second sense: the individual's state of inner peace makes it possible for the equilibrium referred to above to be achieved, which in turn makes her more of an effective participant in "the service of the human community", especially when one is faced with the "injustices, sufferings, and misery of mankind".

The ecological crisis, which, in Chapter 2, I showed to be directly caused by human actions in a dispensation dominated by Promethean attitudes, is most assuredly one where humankind is faced with all manner of "injustices, sufferings, and misery". Loss of biodiversity demonstrably results in the eventual collapse of ecosystems on which human beings depend for their own sustenance; loss of topsoil creates desertification and the accompanying intensification of hardship for communities of people who live in such conditions; climate change displaces island and coastal communities; and so on. Added to this are "injustices, sufferings, and misery" in the non-human world, some of which were glimpsed in Chapter 1. I have commented already that the issues surrounding the ecological crisis seem like issues worth worrying about, but the most recent train of thought about philosophy as a way of life raises an important question about "efficacious action" (Ibid) in the context of ecological crisis – are worry, fear, anger, and resentment the best motivators of and means to "efficacious action"? Surely the answer to this question has already been glimpsed in this chapter: inner peace, it has been seen, occurs when focus is directed towards the living present and away from "the burden and prejudices of the past, as well as from worry about the future" (Hadot 1995:259). With the conviction bestowed upon one by the call of justice (as alluded to by Hadot in the recent longer quote about 'communitary engagement'), and with the equanimous state of inner peace nurtured by practicing philosophy as a way of life as traced by Hadot, one seems well

equipped to deal with “the blows of fate” (Hadot 1995:264) and the “events imposed by destiny” (Hadot 1995:274). The individual practicing philosophy as a way of life, therefore, ‘does not suffer’ in the context of suffering (or, at least, suffers less than if perceiving ‘habitually’), and accordingly interacts in a ‘wise manner’ as suggested by Hadot when he writes, as already seen, that wisdom “consists in precisely such an equilibrium, and inner peace is indispensable for efficacious action” (Ibid).

7.4.1 Conclusion to Chapter 7

In the first half of this chapter I focused on the role of philosophy as argued for by Badiou and Žižek, while in the second half I focused on the role of philosophy as Hadot presents it in light of his work on ancient philosophy as a way of life.

I have shown that Badiou and Žižek’s thoughts on the matter present the role of philosophy ‘in the present’ as something very diverse, but certainly it is a ‘foreign-ising’, displacing and transformative force, where that which is ‘foreignised’ is *humanity as it has been historically constituted*. Philosophy cannot confine itself “to humanity as it has been historically constituted and defined” (Badiou 2009:74-75) without diminishing itself and suppressing itself. I have shown elsewhere in this study that humanity as it has been historically constituted is Promethean, and with extensive references to Badiou and Žižek I have argued that in its opposition to historically constituted humanity, the outcome of the role of philosophy as presented by Badiou and Žižek is thoroughly aligned with the Orphic attitude. This is not to say that philosophy as argued for by Badiou and Žižek is definitively Orphic in character, but that the ‘outcomes’ of applying philosophy as they see it are clearly Orphic. In the first half of this chapter I worked to elucidate the particular ‘outcomes’ to which I have just referred, emphasising that these outcomes can play an important role in the context of the ecological crisis as I developed this context in previous chapters.

In the second half of the chapter I looked at Hadot’s exploration of philosophy as a way of life, showing clearly that philosophy as a way of life is perfectly aligned with the Orphic attitude. Philosophy as a way of life promotes cosmic consciousness and inner peace where existence and perception are endowed with inherent value, thereby disrupting the instrumentalism and utilitarianism of Promethean habitual perception. I showed that philosophy as a way of life is thoroughly Orphic in character, and furthermore that this manifestation of philosophy has outcomes that promote Orphic *interactions within* nature rather than Promethean action *upon* nature. I emphasised that these outcomes can play an important role in the context of the ecological crisis as I developed this context in previous chapters.

Considering the urgency for the human species to find a sustainable (Orphic) route forward in light of the ecological crisis, a (Promethean) crisis human beings have played no small part in creating, philosophy as I have explored it in this chapter is something to which we can turn individually and collectively for help in this most important of matters.

I will conclude this chapter with reference to Heidegger’s notion of *Gelassenheit* – a notion of considerable relevance considering various issues, information, arguments and themes that have been explored in this chapter. *Gelassenheit* is usually translated as ‘letting-be’, but not in a passive

sense; on the contrary, in an active sense of letting the earth *be* an earth, letting animals *be* animals, etc.: “Freedom for what is opened up in an open region lets beings be the beings they are. Freedom now reveals itself as letting beings be”⁵¹⁰: this

is not to be understood only as the mere management, preservation, tending, and planning of the beings in each case encountered or sought out. To let be – that is, to let beings be as the beings which they are – means to engage oneself with the open region and its openness into which every being comes to stand, bringing that openness, as it were, along with itself.

What the Promethean non-ethos has done, and still does, with its exclusive focus on pragmatism and instrumentality, is to negate ‘letting-be’: “humanity replenishes its ‘world’ on the basis of the latest needs and aims, and fills out that world by means of proposing and planning. From these man then takes his standards, forgetting being as a whole” (Ibid). If the forgetting of being as a whole occurs in the realm of the Promethean – and this certainly fits with the analysis of the Promethean as it has occurred in this study – then perhaps the Orphic arena, where respect for the inherent value of being is a central characteristic, best offers opportunities to ‘remember being as a whole’. Appropriate to my argument – that philosophy as it is focused on in this study is well situated in the Orphic arena – is Heidegger’s comment about philosophy (.pdf pg.9): “In the gentle sternness and stern gentleness with which it lets being as such be as a whole, philosophy becomes a questioning which does not cling solely to beings yet which also can allow no externally imposed decree”. To repeat, philosophy “lets being as such be as a whole”, which is an Orphic quality, even possibly the ultimate Orphic quality considering the context of the ecological crisis. In “not cling[ing] solely to beings” philosophy is flexible and allows for dialectical processes to occur, which, as I have argued in the introduction to this study, is not the case in the realm of exclusive Prometheanism. In allowing “no externally imposed decree”, philosophy does not impose dogma, ideology, or attitudes onto anything – which again emphasises the compatibility of philosophy with the qualities of the Orphic.

In the final part of this study, specifically the ‘recommendations’ part, I will make suggestions regarding how to make some of the focal areas of this chapter (as well as other chapters) ‘actionable’ in manners whereby qualitative and quantitative results can be created to help in mitigating the causes of the ecological crisis.

⁵¹⁰ Quoted from the online text of Heidegger’s essay, ‘On the essence of truth’. Pdf. pg. 6. <http://aphelis.net/wp-content/uploads/2011/02/Martin-Heidegger-On-the-Essence-of-Truth.pdf> accessed 5 March 2017.

Recommendations and suggestions

In light of the progression of some of the themes and information that have been interwoven in this study, the following recommendations and suggestions are offered. The fact that these are offered would no doubt be regarded by many 'academic philosophers' as not belonging in a doctoral thesis, or any 'philosophical' text, for that matter, because of academic philosophy's incompatibility with the notion of philosophy that I advance and defend here – one modelled on what Hadot (and further back, the ancient world) calls 'philosophy as a way of life' (discussed at length earlier). In the light of the sense of philosophy that this study subscribes to, therefore, these 'recommendations and suggestions' are completely consonant with the thoroughgoing argument.

Points relating to philosophy

First – and this may come as some surprise to individuals who consider themselves to be philosophically minded – it must be remembered that, according to Badiou (2009:74-75), if a philosopher defends, or justifies, or argues in favour of, *humanity as it has been historically constituted*, and/or *the established model of humanity*, the philosopher *diminishes or suppresses* philosophy: "Each time that philosophy confines itself to humanity as it has been historically constituted and defined, it diminishes itself, and in the end suppresses itself. It suppresses itself because its only use becomes that of conserving, spreading and consolidating the established model of humanity". I have shown in this study that *humanity as it has been historically constituted*, and/or *the established model of humanity* is/are Promethean, and I have also shown that Promethean attitudes have propelled the most destructive of ecological outcomes. In this light, anyone interested in philosophy, anyone who considers themselves to be philosophically minded, and anyone participating in philosophy in whatever manner, must remember that if they defend *humanity as it has been historically constituted*, and/or *the established model of humanity*, she or he not only 'diminishes' or 'suppresses' philosophy, but as a consequence of the domination of Western history by the Promethean, she or he also 'justifies', spreads and consolidates ecologically-problematic attitudes and phenomena.

Second, and further to the first suggestion, Badiou and Žižek do offer areas of philosophical focus that they consider more fitting for philosophy 'in the present'. Philosophers can turn their attention to any of the following areas of focus if they wish to exonerate themselves somewhat from (the ecologically-problematic) established models of humanity:

* Incommensurability, mutual exclusivity, and paradoxical relations. * The creation of new problems. * The changing of the concepts of the debate. * The lack of certainty of 'being at home'. * Internal foreignness. * The breakdown of organic society. * The elucidating of choice. * The shedding light on the distance between power and truths. * The redefinition of human nature. * The focus on singularities that participate in universality. * The disclosure of preconceived ideas of human nature. * Thinking about the 'transformation of life'.

The focus on any of these areas of philosophy will invariably, in the context of a dispensation shaped by the Promethean, halt Promethean Business-as-usual at the very least, and perhaps facilitate a focus on Orphic (ecologically-sensitive) ideas, attitudes, and projects.

Third, the ‘clash’ between, on the one hand, the Promethean attitudes and systems that drive the ecological crisis and, on the other hand, the Orphic attitudes that could direct human actions away from ecologically-problematic outcomes, is an exciting clash considering that aspect of philosophy (as depicted by Badiou and Žižek) occurring in the presence of paradoxical relations: “There is philosophy, and there can be philosophy, because there are paradoxical relations, because there are breaks, decisions, distances, events” (2009:19). The ecological crisis and the myriad of associated issues (discussed in this study) are therefore fertile areas of focus for people who wish to participate in philosophy as a dynamic process, versus philosophy as a purely academic discipline (which I will comment on in the next point).

Fourth, philosophers should consider that philosophy’s categorisation as primarily an academic discipline is, as I have shown, a consequence, according to Hadot (1995:269), of the association that occurred between philosophy and Christianity (which I have shown was predominantly characterised by Promethean attitudes) during the Middle Ages. Prior to this period, philosophy was, according to Hadot, a way of life, and as I have shown in Chapter 7, philosophy’s role was partly to transform people. This transformative process is one away from habitual perception (associated with Promethean instrumentality, operational thinking, exclusive pragmatism, and thinking in terms of utility) and toward cosmic consciousness, in which the inherent value of being, and the interconnection of all beings and places, are recognised – an Orphic recognition – and centralised. The philosopher who merely ‘talks the talk’ is simply dabbling in philosophical discourse, something that developed in the educational institution of the university alongside the Promethean project of global domination, which I have shown to have resulted in the ecological crisis. Such a philosopher, however, does not ‘walk the walk’ and work to guide her or his actions according to philosophical perception, which I have shown to be Orphic in character, and which inherently emphasises the interconnection of the individual with the cosmos, thereby having the effect of guiding one toward ecologically-sensitive actions. When a (desirable) resonance between individuals and ‘the cosmos’ is stressed here, it is important to note that ‘cosmos’ means ‘order’ (or ‘world’, for the ancient Greeks) – not in the sense of a militarily imposed order, but one that is alluded to in the title of Thomas Princen’s book, *Treading softly – Paths to ecological order* (2010).

Fifth, philosophical transformation in the context of philosophy as a way of life is a transformation toward personal inner peace, which requires that individuals constantly ‘work on themselves’ to do (Orphic) things like remain as aware as possible of their interconnection with the cosmos and nurture respect for the inherent value of nature, recognising that human beings are part of the cosmos and part of nature. In ‘working on oneself’, one breaks their own ‘habitualised’ patterns (which are by and large Promethean), and therefore breaks the exclusive grip of the Promethean in their own lives. This is, of course, important because when one breaks the grip of the Promethean, they halt ecologically-problematic actions in their own lives. But Hadot (1995:274) also points out that “inner peace is indispensable for efficacious action”, and he specifies that a crucial context in which such efficacious action unfolds is the community: “the philosophical life normally entails a communitary engagement”. Philosophers, in practising philosophy as a way of life (which is Orphic, and which involves ‘working on oneself’), therefore can take ecologically-respectful attitudes and ideas into their own communities, instigating social change away from the Promethean and toward the Orphic.

Sixth, it is suggested that one be cognisant of the character of philosophy discussed by Badiou and Žižek, which I argued resonates powerfully with the character of the Orphic, as well as Hadot's philosophy as a way of life, which 'leaps out' at one as clearly Orphic in character. Exploring and experimenting with philosophy as depicted by these philosophers affords one the opportunity to transform oneself away from an exclusively instrumental, utilitarian, operational, pragmatic, and ecologically-problematic approach to the world, and instead towards an attitude where nature is respected as inherently valuable, and where human actions become directed by such an Orphic awareness. In other words, one can learn from philosophy (as it has been explored in this study) how to 'let things be', which is an indispensable lesson in the context of the ecological crisis.

Seventh, to recognise that the nurturing of Orphic attitudes is something that can begin with the transformation of the self in the manner spoken about by Hadot in Chapter 7, is recommended, which is to say that people can work on transforming *themselves* if they wish to contribute positively towards transformation in general. Considering that the world's population of human beings is well over 7 billion people at the time of writing this sub-section, the transformation toward the Orphic cannot end with the individual. However, the individual can go about furthering the spread of Orphic attitudes more generally (for example, via 'communitary engagement', as discussed in Chapter 7), which the individual will surely be better equipped to do after self-transformation.

The eighth suggestion is to identify habitual perception, utilitarianism, operational thinking, subjective Reasoning, and instrumentalism when these Promethean attitudes are exclusively employed, regardless of the context in which such attitudes are encountered. I have shown in this study that these attitudes are deeply inculcated in causing the ecological crisis, and they need to be singled out in all socio-political and economic arenas, and revealed for what they are, i.e. attitudes that result in ecologically-problematic action being perpetuated across the socio-political and economic spectrum.

General points

First, if one considers the context of the ecological 'situation' on Earth to be of any importance, then it is crucial that s/he remembers that human actions and industries have consequences for ecology. Human beings, in our current numbers and with our current Technology, have a notable (negative) impact on planetary ecosystems. It would be very useful if one carefully considers the outcome of their individual actions, and of the collective actions of socio-political and economic groups of all sizes, making adjustments on the *spectrum* where the 'strictly Promethean' and the 'strictly Orphic' are the far extremes. These adjustments would occur in the context of flexibility (Mollison 1988:3) that was seen in my outline of permaculture theory and practice:

It has become evident that unity in people comes from a common adherence to a set of principles, *each of us perhaps going our own way, at our own pace, and within the limits of our resources*, yet all leading to the same goals, which in our own case is that of a living, complex, and sustainable earth. Those who agree on such ethics, philosophies and goals form a global nation. [Emphasis added]

Second, to look carefully at the context(s) into which one has been born and raised, and acknowledge the default (historically dominant) Promethean assumptions and attitudes at play in the given context(s). These assumptions and attitudes mould people in the sense evident in this comment (to which I have referred more than once in this study already) from White (1971:11):

“What people do about their ecology depends on what they think about themselves in relation to the things around them”. The Orphic/Promethean spectrum allows one to position certain discursive ‘qualities’ at different points on the spectrum; a good example is the assumption that humankind occupies a higher rung on the evolutionary ladder than all other forms of life. This assumption can then be identified for scrutiny, as Rosi Braidotti does in *The posthuman* (2013), and the impact of the assumption can be considered versus perhaps a different and more Orphically-aligned idea. This evaluation process seems in accordance with Badiou and Žižek’s depiction of the general role of philosophy as focused on in Chapter 7.

Third, to consider carefully the extent to which one’s socio-political and economic environments (for examples, one’s workplace and government) keep the cycle of Promethean action spinning. I am not suggesting that one immediately acts upon the knowledge that, for example, Capitalism “is the uncontrollable force driving our ecological crisis” (Kovel 2002:vii), but certainly to look honestly at, for example, the way in which the Capitalist system is structured to perpetuate itself at the exclusion of alternatives to it. The tendency of the Capitalist system to reward certain Promethean actions with monetary remuneration – for example, the externalising of costs, which is accompanied by heavily detrimental ecological impacts – can then be positioned on the Orphic-Promethean spectrum.

Fourth, to seek out attitudes and ideas, movements and projects, etc., exhibiting qualities and outcomes that have been identified as Orphic in this study, remaining aware that the character of the Orphic must entail a heterogeneity of attitudes and ideas, movements and projects, instead of the dominance of only one. Chapters 5 and 6 contain examples of such Orphic alternatives.

Fifth, it is important for one to begin implementing permaculture principles. This can be done on various scales. On a small scale, and as a start, one might arrange the objects in their bedroom according to the principles in order to gain a rudimentary understanding of the ways in which energy flows through a given system. On a bigger scale, one might abandon their neatly-mowed lawn and establish a set of garden beds for the growing of a few seasonal vegetables, and plant fruiting trees on the perimeter of their abodes, paying attention to the ways that nature’s energies flow through the environment and how s/he can most harmoniously synergise with the energies – and in the Orphic view, human energy is included here. This careful approach to design, as well as the outcome(s) of the approach, can then be compared to other systems where people were not cognisant of permaculture principles or the natural factors constituting a given environment.

On the paradoxical need to discriminate

The Orphic arena is inherently one in which tolerance for difference, and tolerance for heterogeneity, are key ingredients. However, I have argued in this study that the Promethean characteristics of dominion, competition, growth at the expense of an environment, and so on, are the very qualities that have resulted in the Promethean project that is historically dominant. Accordingly, Orphic manifestations of being have been persecuted and marginalised by the broad Promethean agenda. Nature does not ‘do homogeneity’, so it is unsurprising that an anthropogenic ecological crisis has developed under the reign of exclusive and homogenising Prometheanism.

It therefore is the case that, if a turn away from problematic Promethean attitudes and actions is to be taken, *exclusive* Promethean endeavours and attitudes need to be discriminated against. Note

that I do not use the word 'discrimination' in the sense implied when one speaks about racial discrimination, where one is entirely denied access to, for example, a job, based on one's race. I use the word instead to denote a more nuanced process of evaluation, where the Orphic/Prometheus spectrum is used as a tool to identify the attitudes and assumptions at play, as well as the ecological impact of those attitudes and assumptions. Where a viable and workable Orphic alternative is available, then the proposed Promethean idea might need to be 'put on the shelf', so to speak, in order to give the Orphic a chance to recoup after centuries of 'side-lining' by the Promethean. At very least, what initially was a decision made from a purely Promethean perspective can be 'toned down' by the inclusion of some aspects of an Orphic perspective.

A very quick example will illustrate my point. I have successfully used a 'humanure' compost toilet system for *five years* at the time of writing this sub-section. I have taken the necessary steps to process the human manure appropriately, and the final product – compost – ends up in the garden beds, in which my partner and I grow food and trees. I consider the system to be rather Orphic in character: the hardware of the system is constituted by recycled materials; there is no cement sewer or drainage system; no water is used to flush the toilet; no artificial chemicals ever enter the system, so accordingly such chemicals do not need to be produced. However, when I first proposed implementing this system, I was literally laughed at by more orthodox members of ACID; I was told explicitly that the method would make me sick; I was told that there are good, logical 'hygiene reasons' why conventional toilet systems *must* be part of one's lifestyle. The Business-as-usual response was to discourage and to prevent my 'divergent' activity, to the point that I was told I would never get planning permission for such a toilet system – not that it ever was my intention to ask for 'planning permission'. Despite ridicule, I implemented the system, and (to repeat) I have been using it for *five years* – not only have I experienced none of the problems 'predicted' by orthodox members of ACID, the system has also been a resounding success.

This is the kind of discrimination *against the Orphic* inherent in the Promethean arena, and is completely divorced from the need to do things like make soils from human waste in an urgent attempt to reclaim some of the top-soils destroyed or lost during the reign of the Promethean. So even though it seems contradictory to call for the Orphic to discriminate, it does at least seem necessary for discrimination (in the manner I have described here) to occur in favour of the Orphic, and for Promethean agendas to be 'shelved' or 'filtered down' to allow for the nurturing of a different, literally non-toxic dispensation. This is of course a matter for further consideration, discussion and debate.

Specific actions

Based on the permaculture research I have done for this study, I have identified several specific *practical* actions that the average person can work towards taking in their own lives, things that would work to take the proverbial ball out of the Promethean court and instead help in exemplifying something more of a horizontal Orphic dispensation:

- * Immediately stop flushing fertility (human faeces and urine) down the toilet. Find a way to get it composted and return the compost to the system, along with all of the organic materials produced in the household.
- * Catch rainwater off the roof and store it in tanks or barrels. Accordingly, use water sparingly, changing the frequency of showers, baths, and clothes-washing.
- * Use ecologically friendly soaps for washing, and return the water into the garden.
- * Plant trees wherever and whenever possible, both indigenous and fruit-bearing trees.
- * Grow

some food, at whatever scale is manageable. * Purchase a small solar-power system and monitor how much electricity is generated with it, and how quickly a person uses the electricity, adjusting power-usage in an attempt to match the power-output of the small solar-power system. * Purchase food grown locally, with the least amount of packaging instead of gratuitously packaged food, and insist 'in-store' that food packaging is reduced. * Stop purchasing new things, and instead 'up-cycle' wherever possible. * Build a 'solar cooker' and install a solar water-heating system (as simple as a coil of black pipe on the roof), and align cooking and hot water needs with the cycle of the sun.

Apart from the practical actions just suggested, I will now refer to some general practices that can cultivate an inherent respect for nature:

* Spend some time each day 'simply being', without distractions such as entertainment, not doing anything involving practical outcomes. * Prioritise spending some time (as one's schedule allows) outdoors in a natural place, observing nature. * Limit exposure to the mass media, social media, and advertising. * Observe non-human life without judging or analysing it. * Exercise thrift.

I am not suggesting that these actions will solve the problems of ecology I have identified in this study, but certainly the steps are ones that a person can easily take without relying on a large-scale system change. Remember, I have shown in this study that a large-scale system change is unlikely to occur considering that the system at large, ACID, the Promethean 'writ large', perpetuates itself while marginalising alternatives (or 'changes') to it. A person wishing to take action must therefore do so oneself, seeking guidance from other individuals who have dared to take actions toward implementing alternatives. I have offered some suggestions in this section that may be helpful as the initial steps in proactively retaliating against the Promethean, and in nurturing the Orphic, but certainly much more is needed from a very large per cent of the human population if we are to prevent ecocide "in pleasant ways of our own choice" (Diamond 2005:498). If, however, the human race cannot collectively step up to the challenge of radically altering the Promethean dispensation of ACID, then in implementing the small steps I have suggested, people will at least be afforded one small measure of self-reliance when the system changes "in unpleasant ways not of our choice" (Ibid).

Finally, I suggest active and outright rejection (as far as possible) of purely Capitalist attitudes and agendas, as well as active and outright rejection of those aspects of Christianity, Science, Technology, and Democracy that exhibit purely Promethean attitudes. Capitalism, also known as the 'free-market', must be rejected entirely, because as Jensen and McBay (quoted in Foster, Clark, and York 2010:1) state: "Industrial capitalism can never be sustainable. It has always destroyed the land upon which it depends for raw materials, and it always will. Until there is no land (or water, or air) for it to exploit. Or until, and this is obviously the far better option, there is no industrial capitalism". Christianity, Science, Technology, and Democracy, on the other hand, are not necessarily inherently Promethean (as shown by St Francis of Assisi's embrace of all creatures and things in nature as 'brothers' and 'sisters' in the late 12th and early 13th centuries), but as I have shown in this study, they have historically unfolded in their almost exclusively Promethean formats. This active rejection is motivated by the awareness that to *not* reject the listed shapers of discourse (i.e. Business as usual) is to 'drive the final nail into the coffin of life': as Foster, Clark and York (2010:14) point out, "We are at red alert status. If business as usual continues, the world is headed within the next few decades for major tipping points along with irreversible environmental degradation, threatening much of humanity. Biodiversity loss at current and projected rates could

result in the loss of upward of a third of all living species this century". If one wishes to lessen the severity of the crisis, one must act immediately, and one's actions must occur beyond the realm of the Promethean, which entails a rejection of it and the dominant shapers of discourse that are a result of it and simultaneously perpetuate it.

Conclusion

James Lovelock has written the following⁵¹¹:

It may be that the destiny of mankind is to become tamed, so that the fierce, destructive, and greedy forces of tribalism and nationalism are fused into a compulsive urge to belong to the commonwealth of all creatures which constitutes Gaia. It might seem to be a surrender, but I suspect that the rewards, in the form of an increased sense of well-being and fulfilment, in knowing ourselves to be a dynamic part of a far greater entity, would be worth the loss of tribal freedom.

Lovelock's focus here is on tribalism and nationalism, which, to be sure, foster fierceness, destructiveness, and greed, as Lovelock points out. The focus in this study has been on manifestations of the Promethean, where fierceness, destructiveness, and greed are characteristics clearly compatible with the general Promethean *modus operandi*. But in response to Lovelock's remark – that it “may be that the destiny of mankind is to become tamed” – I must ask, who will do the taming? Who will force the surrender to which Lovelock refers? Certainly, if one takes seriously the qualities, characteristics, and *modus operandi* of the Promethean that have been looked at in this study, then it is clear that the taming and/or the surrender will not take place as a consequence of a ‘decision’ made, or process initiated, by proponents of the Promethean attitude – as I have shown in this study, the Promethean actively negates the possibility of alternatives to it from arising. I have also shown that Christianity, Science, Technology, Capitalism – and here I must add Democracy⁵¹² – as they *have historically unfolded*, have laid the way for the contemporary socio-political and economic dispensation of ACID, which I have shown is a disaster for the collective ecology/ecologies of the planet. None of these are arenas that genuinely ‘open themselves’ to anything but that which perpetuates them. It follows that the taming and/or the surrender to which Lovelock refers will not arise from the dominant Promethean arenas of ACID – Capitalist Politics, growth-focused Business⁵¹³, reductionist and materialist Science, and Technology as directed by the dominion imperative – and that a “commonwealth of all creatures” constituting Gaia will thus not be actualised from within ACID or from anything Promethean.

The taming and/or surrender referred to by Lovelock will have to occur in some other way, and two possibilities readily come to mind. The first possibility is the occurrence of some sort of large-scale disaster affecting a considerably large per cent of the world's population, including those people in first world countries who have materially benefitted the most from the era of the Promethean. Judging by the ‘attack’ on nature that has accompanied the rise and dominance of the Promethean dispensation of ACID, a far-reaching ecological disaster induced by humankind is unfortunately a plausible scenario. This first possibility is one for which a thorough context is established in Chapters 1 to 4 of this study, i.e. the Promethean component. All that has to occur is for Business as usual to continue unabated: “We are at red alert status. If business as usual continues, the world is headed

511 Accessed 6 March 2017 at <https://www.marxists.org/reference/subject/philosophy/works/us/gaia.htm>

512 This addition is made upon reflection of the content of Chapter 4, sub-section 4.3., where ‘Democracy’ in a ‘free-market’ neoliberal Capitalist system is heavily inculcated as a prominent perpetuator of the Promethean dispensation. Democracy in its Promethean format is something to which I ascribe a capital letter, i.e. Democracy as it has historically unfolded versus democracy in its idealised form. This is based on Speth's distinction (2008:31) apparent here: “I use ‘modern capitalism’ here in a broad sense as an actual, existing system of political economy, not as an idealized model” – something I have commented on several times in this study already, as early as in the ‘Conventions’ section.

513 I capitalise the first letter of the word ‘Business’ for the same reason I capitalise Christianity and Capitalism, a reason I have discussed several times in this study already.

within the next few decades for major tipping points along with irreversible environmental degradation, threatening much of humanity” (Foster, Clark and York 2010:14).

The other possibility is one contextualised by the information, themes and arguments in Chapters 5 to 7, i.e. the Orphic component. In Chapter 5, it was seen that Paul Hawken has made it clear that between one and two million organisations operate across the globe, organisations that in one manner or another work to bring justice to where Promethean powers have caused injustice. To be sure, these are small and ‘divergent’ groups whose influence is negligible in comparison to the influence of the Promethean powers in the globalised world. Yet these organisations form ‘nodes’ on a network, a network that could perhaps be thought of as an immune system of sorts, as Paul Hawken has pointed out (see Chapter 5). The Occupy Movement raised awareness *on a global scale* of various issues that have been explored in this study, and members of the Zeitgeist Movement continue to advocate positive social change in meeting groups (known as ‘chapters’) all over the world. Increasing evidence supports Graham Hancock’s research into a lost ancient civilisation that predates the ancient Egyptian civilisation – school and university history books may soon be rewritten, showing the youth that ACID is not an apex in human ‘development’, and that even highly ‘advanced’ civilisations have risen and fallen in the human past. The world’s economy is exceedingly fragile, and with further destabilisation there is strong potential for people to seek alternatives such as the ones discussed by Charles Eisenstein. As Science provides more and more *information* about the physical world, but clearly does not enhance *knowledge* about how to live in an ecologically ‘sick’⁵¹⁴ world, people will have to look elsewhere for ‘scientific guidance’, and Rupert Sheldrake offers an Orphic alternative with the potential to radically change the essence of the scientific enterprise. As the Promethean attitudes associated with ACID are increasingly revealed to result in an unsustainable human ‘civilisation’ due to its neglect for, and negation of the natural world, people may seek guidance from ‘older cultures’ whose relationship with the natural world is sustainable (or, unfortunately, *was* sustainable, considering the phenomenon of ‘absorption’ of members of older cultures into the globalised model of ACID). As the world of academia is increasingly stifled by rigid disciplinarity, bureaucracy, and Business-concerns associated with the reign of ACID (e.g. funding issues), philosophers can play their part by foregrounding, prioritising, and integrating into their work, their teaching, and their lives some of the philosophical ideas that have been discussed throughout this study, though most appropriately the ideas explored in Chapter 7⁵¹⁵, while simultaneously highlighting the ecological plight of the planet, a plight that has direct attitudinal and physical causes.

Jared Diamond, despite being ‘cautiously optimistic’ (2005:521-523) “about the world’s future”, points out (2005:14-15) that a “society's responses [to its problems] depend on its political, economic, and social institutions and on its cultural values. Those institutions and values affect whether the society solves (or even tries to solve) its problems”. I have shown in this study that the dominant institutions are Promethean, and that the Promethean actively marginalises and/or negates that which is alternative to it, so I do not share Diamond’s cautious optimism that responses to society’s problems will proactively be arrived at. Instead, I consider myself to be ‘realistically

514 Here I invoke the analogy of a sick patient, discussed at the start of the Aims and Methodology section.

515 On this note I hold up Bert Olivier as a shining example of a philosopher and academic who has throughout his career brought ‘Orphically-aligned’ issues to the forefront of academic discussions, grounding such discussions on ‘matters of ultimate concern’ (to quote Vetlesen – see Chapter 3), proactively resisting the bureaucratisation of the university by Promethean powers who wish to model the university on that of a Business.

pessimistic' that the dominant Promethean shapers of discourse will continue 'doing what they do', steering the collective planetary organism toward what Diamond (2005:498) refers to as the 'resolution' of "the world's environmental problems... in unpleasant ways not of our choice":

Thus, because we are rapidly advancing along this non-sustainable course, the world's environmental problems will get resolved, in one way or another, within the lifetimes of the children and young adults alive today. The only question is whether they will become resolved in pleasant ways of our own choice, or in unpleasant ways not of our choice, such as warfare, genocide, starvation, disease epidemics, and collapses of societies. While all of those grim phenomena have been endemic to humanity throughout our history, their frequency increases with environmental degradation, population pressure, and the resulting poverty and political instability.

However, despite my pessimism regarding large-scale, institutionalised steps toward solving the world's ecological problems, I have shown in Chapter 6 that a person can take matters into their own hands and, by applying permaculture techniques and by applying permaculture principles, can design their own systems. This is grounds for some hope, because a person can work toward being part of the proverbial solution rather than the problem. This may not solve the world's ecological problems, but it does give one the chance to create an environment in which respect for nature's inherent value can be nurtured and foregrounded, and in which one can 'let things be', and where one breaks free (to some extent) from the pattern of perpetuating 'humanity as it has been historically constituted' by the dominant Promethean shapers of discourse. Along the way, individuals who have embarked on the journey of Orphic discovery can spend time in rare contexts unhampered by the Promethean attitude, and opportunities to nurture 'peace of mind' or 'inner peace' can increasingly be incorporated by individuals who make concerted efforts to do so. I agree fully with Hadot when he says that (1995:274) "inner peace is indispensable for efficacious action" – efficacious action by committed individuals, such as the individual persons or movements considered in Chapter 5, is in my view a more realistic means by which broader socio-political, economic and cultural change can be instigated, rather than placing hope in inherently Promethean institutions, who resist change (as I have shown in this study). It is in this regard that philosophy as I have explored it in this study also plays such a critical role in the context of the ecological crisis. My focus on some of Hadot's work has revealed philosophy as a way of life to be an Orphic project where nature is actively allowed to 'let be', and where the individual who practices philosophy as a way of life must to some extent engage with their communities, potentially slowing the spread of the Promethean agenda and instead working to create opportunities to nurture Orphic ideas, attitudes and actions. And as seen in my focus on Badiou and Žižek's take on philosophy 'in the present', defending *humanity as it has been historically constituted* (which I have shown is Promethean) is not the job of the philosopher – the philosopher must, to some extent at least, dabble *beyond* the restrictive realms of the Promethean, and Orphic attitudes can thus be incorporated into the philosophical remit.

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(Please note that all of the following internet addresses are for the 'home pages' of internet sites which I have referred to in this study, and not for the full addresses of the specific pages. The full addresses of the sources, as well as the dates on which they were accessed, are provided in footnote form at the relevant points in the main body of this study.)

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