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The Nature-Culture Divide: The Modern Realities of Sustainable Development

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To what extent is the nature-culture divide reflected in the sustainable development paradigm?

Introduction

The notion of the Anthropocene is now a widely accepted concept for scholars in the humanities Although the extent to which it is adequately considered as a variable of study can be debated (Harrington 2016). The Anthropocene itself "emphasises the central role of mankind in geology and ecology, [...] and illustrate[s] the growing impact of human [activity] on [the] Earth and [its] atmosphere" (Ibid, 482). Simultaneously, the central role of humankind in these natural phenomena has made it so that we have lost control of the trajectory of the Earth and its ecosystems (Ibid). The definition of climate change set out in the United Nations Framework Convention on Climate Change (UNFCCC) highlights the former point: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (UNFCCC 1992, Art 1.2). Indeed, Fagan highlights that "the anthropocene offers a construction of this new (place for the) human as simultaneously central and all-powerful, and as fragmented and insignificant" (2017, 293). Conceptual developments such as the Anthropocene often trigger a reconsideration of the ways that we perceive reality and produce knowledge; or indeed more practically, undertake policy. In recent years, other notions like the war of drugs, the war or terror, or indeed the war in Ukraine, have led to a drastic reconsideration of aspects like policing, counterterrorism, and military defence capabilities, respectively. Yet, despite these emerging understandings of the impact of human activity on the climate, international climate policy still fails effectively in tackling the issue (Pereira 2017).

Hajer, in this light, argues that "the failure of Rio reflects a lack of political determination" (Fischer and Hajer 1999, 2). Many explanations exist to account for such a lack in determination; notably (a) the nature of the anarchic international order, and stemming from this, the inability to implement coercively-binding international law; as well as (b) domestic explanations like the length of political terms in democracies leading to a lack of long-term planning by politicians. These explanations, and the solutions they propose, are traditionally associated with neoliberal, or realist approaches to International Relations. Indeed Fischer and Hajer highlight that these are "*particular* takes on environmental politics and policy that [have] contributed to the slow and disappointing results" (Ibid). These

particular takes, as geological evidence shows, has arguably failed to adapt to emerging constructed realities unlike the ways in which the international system has adapted to the war in Ukraine or the war on terror. While the war in Ukraine is not over, the dominant framework or paradigm can find the solutions and have an impact on the road to peace. It is therefore necessary to ask ourselves why and how a particular take fails to tackle a particular issue. Why, *despite efforts*, are Co2 emissions still on the rise. I propose to bring to light the roots of *the* particular take on the issue of climate change that the international community has so adamantly defended.

In this light, a growing body of scholarship has begun to reconsider and question many of the philosophical foundations that conventional explanations fail to. Rather than taking Enlightenment philosophy for granted, these scholars have questioned this philosophical base (rather than components of it) that is still present in our modern day epistemo-ontological ordering. While it seems that other contemporary issues like the war in Ukraine benefit from realist or neoliberal understandings of the international system, these scholars argue that the metaphysical roots of our current understanding of reality and knowledge production are inadequate to tackle the issues that stem from the Anthropocene. One of these considerations relates to the very relationship we entertain with nature and the environment and the dichotomy between human society (culture) and the non-human world (nature), which has been coined the *nature-culture divide*. Many scholars now argue that there is a deeply rooted separation between nature and culture stemming from modern-Enlightenment thought, and that this dichotomy as a byproduct of modern thought, is crucial to understand the way we interact with non-human entities (Inoue 2018; Inoue and Moreira 2016; Pereira 2017; Escobar 2021; Latour 1993). In other words, the nature-culture divide, and the metaphysical foundations it stems from, has itself potentially caused us to enter into this new geological epoch: the Anthropocene. If these scholars are right about the nature/culture divide's role in the international response to climate change, then it should be possible to identify the divide's philosophical foundations at the heart of the dominant paradigm[1] that dominates said international response. The aim of this project is to see how the dominant paradigm in the international response to climate change reflects and utilises the central tenets of the nature-culture divide. I aim to look at central texts surrounding the

[1] I use the term paradigm intentionally, as an epistemological system for interpreting reality that ground their pictures of reality in their own construction (Murdoch and Clark 1994). As such, both ontology and epistemology are important in a paradigm.

international response to climate change to identify the ontological and epistemological manifestations of the divide in this dominant paradigm.

Sustainable Development (SD) has arguably been the most dominant narrative or paradigm internationally in trying to find a solution to the climate crisis (Redclift 2005). The SD paradigm has as a central tenet the following: " to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (1987, chap. I.3.27). SD, however, has been used as a term in many different forms, some uses being mutually exclusive to others. Redclift argues: "the expression 'sustainable development' has been used in a variety of ways, depending on whether it is employed in an academic context, or that of planning, business or environmental policy" (Redclift 2005, 66). I use SD as defined by foundational UN texts within the context of combating climate change. This notion is *the* "particular take" on environmental politics that Hajer and Fischer argue has dominated the international response to climate change since the UNFCCC.

The notion of sustainable development first appeared, according to many scholars, in the Brundtland Report in 1987 (Luke 2005; Redclift 2005; Milbrath 1994). A real need was identified concerning the relationship between neoliberal economics and the use of natural, social, and labour resources. Agenda 21's 'basis for action' argues that: *"Energy is essential to economic and social development and improved quality of life. Much of the world's energy, however, is currently produced and consumed in ways that could not be sustained if technology were to remain constant and if overall quantities were to increase substantially. The need to control atmospheric emissions of greenhouse and other gases and substances will increasingly need to be based on efficiency in energy production, transmission, distribution and consumption, and on growing reliance on environmentally sound energy systems, particularly new and renewable sources of energy*" (1993, para. 9.9). In light of these concerns, the Earth Summit, the first gathering of heads of states, IGO, NGOs, and other socio-political groups, occurred in Rio de Janeiro in 1992 (Manulak 2022, 177); setting the stage for the type of organisation in climate conferences that we see today. Fischer and Hajer (1999, 1) states that the 1992 Earth Summit in Rio "marks the moment in which the awareness of the global dimension of the ecological crisis was finally accepted and confronted politically around the world". The Rio Conference of 1992 and the subsequent treaties, conventions, protocol, and agendas that result from it, was the biggest gathering of states on any given issue; attended by 178 states, most agencies in the UN system and 35 intergovernmental organisations (IGOs) (Manulak 2022, 176). The Earth Summit resulted in

five distinct agreements, two of which were binding: the UNFCCC and the United Nations Convention on Biodiversity (UNCDB) (Jordan 1994, 24). Of the other three, that were "hastily negotiated agreements", Agenda 21 was more a loose set of guidelines on SD (Ibid). Important to us, therefore, is the UNFCCC and Agenda 21 as foundational documents representative of a certain direction and adoption of a new paradigm to implement an international response to climate change. The UNFCCC was one of the first frameworks to directly target GHG emissions on such a scale and with such international consensus. Groundbreaking was its implementation of a *framework* for future action; it did so by including a clause on a call to regular meeting, ongoing scientific research, and future policy agreements (UNFCCC, 1992). "*In order to meet the challenges of environment and development, States have decided to establish a new global partnership. This partnership commits all States to engage in a continuous and constructive dialogue, inspired by the need to achieve a more efficient and equitable world economy, keeping in view the increasing interdependence of the community of nations and that sustainable development should become a priority item on the agenda of the international community. It is recognized that, for the success of this new partnership, it is important to overcome confrontation and to foster a climate of genuine cooperation and solidarity. It is equally important to strengthen national and international policies and multinational cooperation to adapt to the new realities*" (Agenda 21, 2.1) Indeed Jordan (1994, 25) highlights: "the Conference agreed on a host of institutional mechanisms which will ensure that the political pressure is maintained on governments and the UN. These include open reporting and review mechanisms and commitments to continue meeting in various fora at various times, in order to re-negotiate problematic issues in the light of new evidence. Over time, standards may tighten as consensus emerges between different States on particular issues". In this regard most multilateral agreements surrounding climate change are a direct result of, or directly influenced by the UNFCCC as drafted in Rio.

The initial UNFCCC as it was conceived in New York and Rio in 1992 is thus the preamble to successive treaties and protocols signed at COP Summits. Ideologically, it set the stage for how to deal with issues surrounding climate change, trying to reconcile economic growth with the sustainable use of natural resources in light of scientific data. Important to us, the UNFCCC normalised the SD paradigm (I argue, a byproduct of the divide between nature and culture) as the solution to climate change. However, Jordan highlights, the notion of SD at the time was not widely accepted or welcomed by many states (Ibid, 25); only after a few years did this notion enter common consensus and discourse of Global North states to say the

least. Indeed, 25 years later, SD is referenced 10 times in the 27-page Paris Agreement, while only mentioned once in full in the UNFCCC. In this regard, the notion has grown in use over time rather than declined, despite a growing body of scholarship criticising the term. What will become clear later on is that these host of institutional mechanisms to adapt to new realities, in fact, strongly reflect pre-existing and subconscious assumptions about the nature of our relationship with the environment, if relationship is indeed an appropriate term.

Two important assumptions have been laid out thus far: (a) the response to the new geological epoch defined as the Anthropocene has been limited, unlike other instances of the emergence of important notions necessitating adapted responses like the war on terror, or the war in Ukraine. This is a result of (b) the failure to profoundly reflect on the presence of underlying philosophical assumptions like the nature-culture divide. While scholars have highlighted the problematic assumptions that stem from a dichotomous view of nature and culture, they have often assumed its presence in the international response to climate change with no concrete evidence. It is in this light that I decrypt the presence of the wider nature/culture divide in the international response to climate change by looking how it is reflected in the SD paradigm, as the most predominant notion with regards to the possible solutions to climate change. Through the similarities in strategies of ontological construction and epistemological production, the SD paradigm is a stark reiteration of the ideas and techniques present in many modernist thinkers. Thus I aim to conclude that the SD paradigm through various techniques of knowledge production and ontological construction reflects and utilises the nature-culture divide. If scholars highlight the problematic nature of a particular *take* on the issue that has the divide as its central tenet, and I can show the presence of the divide, then it seems logical to conclude that the nature-culture divide is at least in part a variable in the failure of the international community to adequately address the issue of climate change.

In Chapter 1, I set out the theoretical framework for the analysis of the SD paradigm and its ontological (Ch.2) and epistemological (Ch.3) manifestations. I give a detailed account of the nature-culture divide in light of its historical and philosophical roots which scholars have identified. Influenced by Latour's analysis of the nature-culture divide, I further separate the nature-culture divide as an (a) ontological problem and (b) as an epistemological problem. A presentation of the former will draw on (a) Cartesian dualism while the latter will draw on (b) the debate between Hobbes and Boyle. Cartesian dualism is often perceived as one of the foundational notions of modernism and Enlightenment thinking through its separation of mind and body and dichotomy that ensues between humans and non-humans.

With Cartesian dualism as the ontological backbone, I will argue that the debate that ensued between Hobbesian social contract and Boyle's empiricism, leading to the separation of the study of the natural sciences and the social sciences is a consequence and perfect continuation of the Cartesian paradigm. Hobbes and Boyle have individually come to be known as the roots of knowledge production about the cultural world, and the natural world respectively. After this discussion on the ontological and epistemological origins of the divide through these scholars, I present Latour's definition of the modern Constitution. For Latour, there is a complex interplay between these scholars with what he coins the purification process and the process of hybridity. The former in essence purifying nature and culture as two separate poles; the latter process merges the two together to create the invincible modern constitution.

Chapter 2 then draws on the theoretical discussion laid out in the previous section to identify how the SD paradigm reflects through certain texts the nature-culture divide *ontologically*. Furthermore through its ontology, I show how the SD paradigm reflects Latour's distinction between purification and hybridity as common practices of the nature-culture divide. I argue that by reducing nature to an amalgam of processes the SD paradigm reflects the common foundations of the nature-culture divide, seeing nature as a static and mechanistic entity. Likewise, I look at how culture/ humanity is represented as the protector of nature in this respect, as a manifestation of the will and artifice projected onto human society. Both of these are manifestations of the purification process. I then draw on the overlap between the two poles of the divide to show how nature is sometimes subject-ified or humanised, or how development as a manifestation of culture is reduced to mechanistic processes.

Chapter 3, in keeping with the structure of Chapter 2, sets out the epistemic assumptions of the SD paradigm in foundational texts pertinent to the international response to climate change. I argue that the SD paradigm reflects the divide by attributing a knowledge production technique to specific variables in its definition. It ascribes to the natural scientist the process of defining what is sustainable, while the social scientist is tasked with defining development. Through the merging of the two, I argue, an inherent hybridity emerges reflecting Latour's conception of the nature-culture divide.

1. The Nature-Culture Divide: Modernity's Metanarrative

I have talked briefly about the nature/culture divide and its presumed presence in the international response to climate change. I now go into more detail about what the

nature/culture divide is. I begin by situating conceptions of nature as a by-product of modernity, by making the distinction between modernity as a mood and modernity as a socio-cultural form, in line with Rengger's distinction (N. J. Rengger 1995). This, I believe, is a good conceptual distinction to introduce the reader to the divide and addresses many objections that readers may have to the remainder of this project; although it will not be the main theoretical foundation of the paper. I then present what I see as the two clear examples of the divide: the ontological through Descartes, and the epistemological through Hobbes and Boyle. I then set out Latour's distinction between the process of purification and hybridity, briefly introduced earlier.

Modernity: Mood and Socio-Cultural Form

I would like to bring the reader's attention to an important distinction raised by political theorist Nicholas Rengger which will perhaps clear up much confusion pertaining to the later parts of this project. As I hope is clear in the introduction, and will become clear by the end of this chapter, the nature-culture divide is a by-product of modernity and modern thought. Yet the latter is often used to criticise and describe every and anything that is part of the greater abstract notion of the neoliberal project and anything that originates from it. Modernity in this sense is anything that is *not* critical of the status quo. This definition of modernity therefore remains very abstract, exposing its critics to unclarity.

Rengger however points to two distinct forms of modernity and modern thought. He distinguishes between modernity as a "mood" and modernity as "socio-cultural form" (Rengger 1995, 40–44). The latter, Rengger argues, "takes the form of general analyses of our condition that emphasise the changing character of the material forces of society, and which emphasises the unique, or at least radically different, character of the modern age from previous ages" (Ibid, 42). Such accounts of modernity for Rengger, are fundamentally concerned with structures, process, and conditions. Following a socio-cultural account historically and geographically situates modernity. By contrast, modernity as a mood refers to the underlying assumptions of modernity that transcends historical time and place. In this account, modernity is tied to the notion of linear progress, teleology, universality etc; one could say these are already assumed as part of the grander narratives of the socio-cultural formations of modernity in modern philosophy. Furthermore, it is a mood in the sense that it separates itself from other moods, like premodernity, which was "less free, less rational, less productive, less civilised, less democratic, less tolerant, and less scientific" (Rengger 1995 *apud* Connolly 1988). As a mood it gives "modern articulations to persistent questions of

meaning, the relation of human life to nature, the relation of the present to the past and the future" (Rengger 1995, 41). To the extent that the nature-culture divide is a byproduct of modernity, it can also be accounted for by way of mood and socio-cultural form. As a mood, for example, nature-culture largely predates the Enlightenment. Notions of separation between culture and nature are even present in Biblical texts, notably in *Genesis 1:26-27*[2]. Yet to the extent that the divide "referred to a mode of social life or organisation" (Rengger, 41) it was not indeed present during biblical times and even prior to the Industrial Revolution. Indeed Mbembe highlights: "Even when relatively large-scale deforestation took place, the forests retained their ecological functions" (Mbembe 2022, 40). By contrast today, with the development of technologies and industry, the mood that leads to large-scale deforestation takes on a socio-cultural form. Forests no longer retain their ecological function. The mood of modernity, in this sense, does not account for the structural changes which come to arise from it. The socio-cultural form of the nature-culture divide only began to shape itself as a result of the works that will be studied below and have culminated in grave climate consequences through the way we organise our societies around the divide. This is both a socio-cultural form, to the extent that the nature-culture divide did not organise or impact social life in the serious ways it does now, yet this type of thinking or mood has been present for much longer and is indeed atemporal. In this sense Bain argues that continuity and transition give a better account of this shift than a radical "historical rupture" (Bain 2020). Because the mood was already there, we cannot say that the Industrial Revolution is the historical rupture where the nature-culture divide abruptly appeared; this pre-existing mood gave rise to certain structures or forms that allow such a mood to manifest itself in material forces like the Industrial Revolution and massive deforestation. As opposed to a false sense of historical rupture, nuance between the two forms of modernity and the nature-culture divide is necessary; they always already emerge and function against the backdrop of the other. Rather we can analyse socio-cultural forms of modernity through modern works like that of Descartes and Hobbes to account for the wider mood of modernity. In what follows I often navigate between these two accounts of modernity and the nature-culture divide by looking at modernity's mood-setting capabilities today, while acknowledging the socio-cultural and historically situated formation of modern thought. In this sense, my argument will assume a tension between the two that will at times lead to intentional contradiction when talking about the nature culture divide, itself encapsulated by both the socio-cultural form of modernity that I give, and the

[2] For a detailed account of the different roots of the divide, notably in Greek and Roman, and Hebraic mythology see (Bérard 2021)

nature-culture divide as a component of the current mood that manifests itself in these socio-cultural forms that I argue are dominant through the articulation of SD as *the* international response to climate change.

The Ghost in the Machine

I have already alluded to Cartesian dualism as an explanation of the definitions of nature and culture and thus the dichotomy itself. In this section, Descartes is used to present the ontological dimension of the nature-culture divide. Cartesian dualism itself is the idea that the mind and the body are separate and distinct. They operate on different levels and engender different characteristics of what it means to be human. Important in dualistic thinking is the idea that the object comes before the subject; prior to being a subject, one must be an object (Williams 2007, 133). Furthemore, one can only understand the *I* by understanding the *me*. "A *me* is inconceivable without an *I*. I perceive that "I" am a physical being but I am also the "thing" that thinks about "my" physical being" (Ibid). In other words, the only way to be sure about our existence is that there is an *I* (or psychic 'self') capable of perceiving a *me*, and thus a *me* capable of being perceived by an *I*. It is from this argument that Descartes concludes: *cogito ergo sum* (Descartes 2004). In this sense, the only thing I am sure of are my ideas, or the fact that I am thinking. While this may not sound problematic in and of itself, Descartes then goes on to argue that the only truly thinking entity, and therefore the only 'subject', is the human. It thus not only creates a dichotomy between a subject and an object, but places one as *lower* than the other, which as will become evident later leads to the idea that humans must protect these mechanistic non-human entities. We are, with this line of thinking, the only species with faculties of reason, reflection, and will. The only ones that can be sure of our own existence. Making us the only true 'beings'; being requires an *I*, of which only humans possess. The non-human world is therefore determined by necessity and causality, by mechanisms; while the human world is determined by desires, affects, free will, and, above all, reason (Dingler 2005, 210). Nature, in this sense, can be deciphered by the cultural human since nature is *pre-social* and void of individuality and variety, free will, and the capacity of reason; the faculties that humans possess are necessary to *find-out* the right workings of a mechanistic nature. More importantly, in this human/non-human distinction (itself pertinent to the nature/culture divide) is the idea that nature remains static while (Western) culture is evolving in and of itself; lending to the idea that the social and natural world must be studied separately, which I elaborate on later.

In other words, Descartes is a good representation of how the divide allowed us to argue that nature and culture operate with drastically different laws due to the 'nature' of each 'entity'. It goes without saying that Descartes did not invent in the space of his 50 years, notions of progress and human nature that underlie his binary point of view between human and non-human. Yet Descartes, with his work representing the ontological dimension of the divide, justifies a socio-cultural form of the divide and modernity to the extent that it allows us to see nature as separate from culture through concrete and somewhat convincing philosophical arguments. He expresses a certain pre-existing mood yet sets a condition or structure that will come to justify other structures and material forces that can best be described as socio-cultural forms of modernity. For many modernist scholars today, notably realist and neoliberal scholars of IR, Descartes is a foundational thinker that has influenced their thinking about and of the order of the international system and the links it has to nature (Pereira 2017). Yet, he also encapsulates the wider atemporal mood of the divide, and in this regard is not a concrete rupture from what came before and after his work. As a proponent or a socio-cultural signifier of modernity he lays ground for the idea that Hobbes and Boyle represent.

Hobbes v Boyle

This process of ontological bifurcation, represented through Descartes, concerning the adequate understanding of what distinguishes the human from the non-human takes on an epistemological turn when it enters the realm of *what is worthy of study, and what knowledge production techniques are needed to study it*. Below, I argue that on top of the ontological divide, there is an epistemological nature-culture divide that leads to two distinct realms of study: the social sciences and the natural sciences. Bruno Latour presents this split, that modernism has cultivated, between nature and culture through the analogy of two prominent thinkers of the Enlightenment: Boyle and Hobbes. Latour's argument is perhaps the best explanation that exploits the Cartesian split in the late-17th century to account for a split in the *study of* nature and of culture encapsulated by Hobbes and Boyle. I will use this distinction later to argue that this split in the 'study of' can be seen throughout the international response to climate change. What will become clear in what follows is that these two thinkers are, although not of their own doing, the emblems of the epistemological character of the nature/culture divide, produced out of a modernist interpretation of their work. While they are emblematic representation of the mood of the nature-culture divide and like Descartes are both prior to and a result of this mood, their work enters the vicious circle

of modernity that allows for a radical social and cultural reordering of this modern mood through the splitting of the social and natural sciences.

For Latour, Hobbes was a constructivist. Writing in times of uncertainty and civil war in England, Hobbes believed that to escape the state of nature that made humans prone to such civil wars, a society must be *constructed* whereby we, as free men in the state of nature, grant absolute authority to a "Leviathan" (Hobbes 2005). For Hobbes, peace and stability could only be achieved through the unity of the one that represent(s)(ed) (the Leviathan), and not the unity of those represented (Ibid). From this Hobbes concluded that power *is* knowledge (Latour 1993, 19). He defended this on the basis that the greatest threat to peace was the various interpretations of the Old and New Testaments. Only through a common and absolute understanding of the political, the religious, and the social, by decree of a Leviathan, can peace be achieved. The Leviathan, as the beholder of power, therefore is also the beholder or creator of constructed knowledge. In this sense, Hobbes represented a sort of monist constructivism that, for Latour, is still present today. Based on this modernist interpretation of Hobbes, this monist constructivism is represented by an absolutism and universalism pertaining to truth. The job of the social scientist has become one of debate about the truth of social life and cultural phenomena; one where the truth of the socially constructed world must be uncovered. Although, Hobbes himself would not argue this since this would make the world prone to instability (see below). Hobbes' goal, in sum, was about creating a unificatory and singular metaphysical foundation so that the lay people would not continue on this path that has been the root of religious and civil war; with this stability, we could now focus on the mundane act of deciphering the truths about the physical world through mathematics and geometry.

Boyle, in contraction posits that we can establish *matters of fact* about the natural and social world (Ibid, 18). Through his famous experimentation with vacuums, Boyle argued that matters of fact can be established in an enclosed lab with the testimony of noble witnesses (Ibid). As Latour argues, Boyle based his metaphor on on judicially established norms: credible witnesses, gathered around the scene of action can attest to the existence of a fact. Boyle, in some sense radically questions Hobbes' framework: one can create knowledge about the natural world and non-human entities through empirical experimentation and, at that, independently of the Leviathan knowing of it. In this sense, Boyle posits that knowledge rests outside of the hands of the Leviathan; the scientist now had the power and authority to bring to light simple *matters of fact*, with the help of credible witnesses, thereby creating a new type of social space (Law 2004, 120). We can find real truths about the world in isolated

environments. Furthermore, whatever happens to the state of society, religion, or politics, these facts will remain as such, because this social space is independent of these other phenomena.

These two thinkers led to the following, based on the modernist interpretations of their works over time: social science (of which politics is a part of) and natural science are two different socially constructed spaces of knowledge production that behave monistically in their own self-designated space. Latour therefore concludes: "In other words, [Hobbes and Boyle] are inventing our modern world, a world in which the representation of things through the intermediary of the laboratory is forever dissociated from the representation of citizens through the intermediary of the social contract" (Latour 1993, 27). The notion of 'intermediary' is crucial in Latourian terms. Hobbes and Boyle had two different views of what intermediary or methodology was necessary to decipher truth. For Hobbes the Leviathan mediates knowledge production, for Boyle the laboratory does. In fact, the very nature of the real-life contention between them at the time was precisely because they were each giving conflicting accounts of the other's answer to the question: what is worth of study and how can we study it? Descartes' distinction between the human and non-human world, thus gave space for compromise where Hobbes's theory could appropriate the human sphere and Boyle the non-human; although each thinker did not arguably intend it as such. While one could say they did adhere to Descartes' distinction between the human and non-human, and in this way already implement a sort of dualistic thinking ontologically, only through the long development of modernity did these take an epistemological turn leading to the dissociation that Latour presents (Ibid, 32). This epistemological turn, as iterated above, is of great importance in the split of the study between the social and natural sciences.

Purification and Hybridity

As is perhaps clear by now, the reason for contention between the two scholars rests on Hobbes' politics being in many ways scientific, and Boyle's science being in many ways political (Latour 1991, 47). For Hobbes, the political, socially-constructed, and hermeneutical are elements that engender science's claims about the natural world; For Boyle, the universal, natural, and mechanistic are elements that engender the political or social life. Hobbes and Boyle most definitely saw these as linked and their use as separate in modernity today would perhaps turn them in their respective graves; although through their attempts at a monistic constructivism they paved the way for monistic universalism within two separate fields; this was and is accentuated by the tendency of modernism to divide and dichotomised in their

argumentation to further perpetuate the modern constitution. Here the reader may notice a contradiction; Hobbes and Boyle while ontologically perpetuating the divide also did not intend a dichotomisation of the fields of study. Their works, at the time, and still today, remain inextricably linked to each other.

Latour here presents an important distinction that he argues makes the modern constitution so strong against its objectors, making it invincible; he talks of the difference between techniques of *purification* and *hybridity/mediation* (Latour 1993, 10). For Latour the modern constitution, with the nature-culture divide as its main tenet, practices the technique of purification. This purification emerges out of the separation of the two poles of the divide, both in their knowledge production techniques as evident with Hobbes and Boyle, but also with their ontological construction of reality as with Descartes (Latour 1991). As is evident in the discussions above the pole of nature, both ontologically and epistemologically, is distinct from the cultural pole. In this sense, the purification process allows the moderns to say that "nature is not our construction; it is transcendent and surpasses us infinitely". Likewise, "society is our free construction; it is immanent to our action." (Latour 1993, 32). Yet at the same time for Latour, the modern merges the two poles to become invincible and allows the modern to say: "Nature is our artificial construction in the laboratory; it is immanent. Society is not our construction; it is transcendent and surpasses us infinitely. " (Ibid). Thus the other pole in this process of hybridisation serves as a balance for the other, where a spillover occurs. In this sense, the moderns engage in two completely different strategies to reify their division, the process of purification on the one hand, and the borrowing from the other pole to reify the division. For Latour, the technique of hybridity in itself is not a negative one. To tackle the issues we face in light of the Anthropocene we need to stop thinking of ourselves as outside nature. We must stop seeing the two poles as poles. Therefore hybridity is only a problem when purification precedes it. Precisely because the hybridity and mediation masks the purification process.

Modernism ventured in a purification of the social and the natural into separate explanatory spheres as the best strategy to solve the Hobbes v Boyle debate. This mood in modernity is now apparent in the way Hobbes and Boyle are used to organise this mood through a certain socio-cultural form. In other words while modernity as a mood and its central tenets remain the same, Hobbes and Boyle have been used to re-organise these central tenets and allow for a certain socio-cultural manifestation of modernity that leads to a distinct organisation of knowledge production by separation of the natural and social sciences by way of purification. Indeed, Latour highlights: "It will take many more authors, many more

institutions, many more rules, to complete the movement sketched out by the exemplary dispute between Hobbes and Boyle" (Ibid). Latour argues that for the modernists, Hobbes *won* the cultural and social debate, while Boyle *won* the scientific one:[In the purification process] "the representation of nonhumans belongs to science, but science is not allowed to appeal to politics; the representation of citizens belongs to politics, but politics is not allowed to have any relation to the nonhumans produced and mobilised by science and technology" (Latour 1993, 28; see also Rudy and White 2014).

Yet, out of these modernist interpretations emerges, as alluded to earlier, a sort of monistic universalism in the division that, at times, rests upon the hybrids between the two modes. Or , an ambiguous "blending [of] morally realist universalism and voluntarist nominalism" (Paipais 2022, 11). Both fields of study operate in a metaphysical sphere that sees itself as *the* modus operandi to decipher a socially-constructed order based on the pre-existing ontological purification in Descartes; in the quest to find objective truth, the nature of human and non-human is crucial to our methodological choice in finding such truth about humans on the one hand, and no-humans on the other. While the social sciences recognises the socially-constructed order, the natural sciences only does so implicitly and occasionally; and while the natural sciences recognises the immanence of nature, the socio-political only calls upon its strategies to reify its modus operandi as *the* only viable ordering of the socio-political order. As such, they purify themselves from the other field, with an implicit hybridisation from time to time in light of critique. In Latourian terms, the untouchability and stability of the modernist episteme has so far rested on the purification process highlighted at length above, but also this paradox that calls upon hybrids. "Because it believes in the total separation of humans and nonhumans, and because it simultaneously cancels out this separation, the Constitution has made the moderns invincible" (Latour 1993, 37). In this sense, Latour argues that each pole serves as a form of checks and balances for the other; The claim of the immanence of nature rests on the artificially created laboratory. Likewise, the construction of the cultural pole rests on the need to resolve the conflict that arises from the state of nature through a Leviathan. At its foundation, it allows for either pole to put on the mask of the other whenever one critiques the constitutional basis of nature as immanent and culture as constructed. The hybridity, in a sense, is oxymoronic to the extent that it also assumes a purification and separation, and vice versa; only with a non-modern approach that criticises the purification process can one identify the oxymoronic nature of hybridity and mediation. Yet, when critiquing the modern Constitution of purification with

hybridity, one is thus always struck with a double-edged sword, allowing the two poles to reify each other.

This is present at the ontological level in Descartes' understanding of the divide. While Descartes purifies the human and non-human, he justifies this on the nature of things as willed by God. In other words, the divide, in Catersian terms, rests on a common link between the human and the nonhuman; humans have certain faculties not possessed by non humans because of the divine will of God. While the order of things is contingent, God willed one particular type of world out of many possible worlds. In this sense, and perhaps most suitably, Descartes is a perfect analogy to Rengger's "realist ghost inside a nominalist machine" (N. Rengger 2013, 149). This allows Descartes, and the moderns more broadly, to blur the lines of the divide and remain invincible. Therefore, Latour argues "If you criticise them by saying that Nature is a world constructed by human hands, they will show you that it is transcendent, that science is a mere intermediary allowing access to Nature, and that they keep their hands off. If you tell them that we are free and that our destiny is in our own hands, they will tell you that Society is transcendent and its laws infinitely surpass us" (Latour 1993, 37).

For Latour, only with the Anthropocene and the emergence of quasi-objects[3] does the constitution begin to metaphysically crumble. It is in this sense that Latour argues that not only have we never been modern, but that the modern episteme in light of the Anthropocene is no longer equipped to deal with our 'relationship' with nature that we created out of modern assumptions. It will become clear in Chapter 2 and 3 how the SD paradigm perpetuates the same techniques of purification and hybridity with nature and culture as two distinct poles in these processes. In other words, the SD paradigm, as emblematic of the nature-culture divide, uses the same tools and techniques to justify itself that Descartes has, and that Hobbes and Boyle have been interpreted as doing.

Nature-Culture: Mood and Form

In combination with Cartesian dualism as an ontological precursor or drive for Hobbes and Boyle, who do not denying Descartes' separation, a path is paved for a distinct manifestation of the divide in society that reflects a continuity in mood to the extent that it

[3] Quasi-objects, for Latour an ever growing occurrence, are neither subjects nor objects. He uses the example of the car put forward by Lévi-Strauss, in which the interaction between car and human is neither one of object-subject, or subject-object, rather in this association both can be seen as objects and subjects. We sometimes speak to our car, give a gender or name to our car; at the same time, starting, driving, or fixing a car is a purely mechanistic interaction in which the human is an object of action that responds to another other mechanistic object for smooth functioning (see Latour 1993, 51-55)

reifies distinctively modernist assumptions like linear progress, teleology, and the divide. Yet the shift in knowledge production techniques that emerges from interpretations of Hobbes and Boyle certainly reflects a socio-cultural ordering of modernity that organises and materialises the central tenets of the mood of modernity through these distinct mechanisms of knowledge production. The latter is a socio-cultural form to the extent that these techniques of knowledge production could have taken form in as a different condition, or in a different structure or hierarchy. In other words, one could have perpetuated the mood of the divide in many other ways, placing importance on other distinctly modern assumptions; for reasons too profound for the scope of this project, the nature-culture divide, at least for Latour, emerged as *the* socio-cultural ordering of the modern mood. The nature-culture divide is thus the separation and distinction between the human and the non-human realms. This distinction rests on the idea that the human has something special pertaining to it by way of the faculties of reason, rationality and free will attributed to it by divine powers. With this assumption modernity saw a necessity to separate the study of nature and culture by arguing that Hobbes most adequately represents the study of society, culture and politics while Boyle most adequately represents the truth pertaining to non-human entities. Perhaps because Hobbes most adequately represents the contingency of the social world in his monist constructivism, while Boyle best represents the staticity and mechanistic character of non-human entities and networks (although this is another project altogether).

The nature/culture divide thus itself encompasses a wider epistemo-ontological framework that Latour, Lyotard, Bain, Gillespie, and Rengger amongst others characterise as 'modernity'. *Through* these thinkers I have tried to demonstrate that the nature/culture divide is the separation and distinction between and of the natural and cultural that takes form both in the ontological construction of reality and the epistemological techniques of knowledge production. Descartes showed us a clear instance of the divide through his ontological distinction between the human and non-human. While through Hobbes and Boyle we saw how this is present in the fields of study that shape modern knowledge production; while I will show just instance of the nature-culture divide as represented by and through these scholars, the reader can find many ways in which they themselves and the institutions they interact with, separate nature and culture. To be clear, I do not argue that these scholars are the first in their philosophical works to highlight the divide, rather I have argued they are *representations* and have been represented as proponents of the dichotomisation of ontology and epistemology as we understand them today. As Bain (2020, 12) rightly highlights: "Hobbes was only identified as a theorist of international anarchy once a consensus had

emerged that the international realm was indeed anarchic." The same can be said for the categories and labels that different schools of thought attach to Descartes and Boyle.

2. The Cartesian Undertones of Sustainable Development

With the nature-culture divide and its wider place in modernism accounted for, we can now turn to SD as the main paradigm present in the international response to climate change. As I argued in the earlier sections, the notion of SD is perhaps the most widely talked about, and consequently, though not coincidentally, the most representative of the nature/culture divide. SD's central tenet aims to preserve the needs of future generations; here I unpack how the SD paradigm uses the ontological strategies of the modern constitution in its solution to preserving these present and future needs. In other words, this Chapter presents the ontological dimensions of the SD paradigm as it encapsulates the ontological dimensions of the nature-culture divide. The main question being answered here is: How, in its ontological ordering strategies, does the SD paradigm reflect the nature-culture divide? To this question I argue that, the main commonality surrounding the SD paradigm and Cartesian dualism as it engenders an ontological *purification* process rests in the staticity and predictability of nature and natural 'systems' (Milbrath 1994), reducing it to identifiable mechanisms and processes, leading to an understanding of the human pole as needing to protect nature . The SD paradigm through a technique of purification sees (a) 'nature as an amalgam of processes', in turn, lending to the idea of (b) 'humans as the protectors of nature'. These stable processes are only altered positively or negatively with the will and artifice of humans, and in the international context, states. Thus recognising the human impact of development on so-called natural systems, the SD paradigm argues that we need to protect nature from ourselves; a sort of revisited original sin. An added layer whereby nature is perceived as a complex set of actors, and culture reduced to a process, engenders the process of hybridity, thus also reifying the divide.

The Original Sin: Cartesian Purification in Sustainable Development

SD reduces nature to an amalgam of processes thereby reflecting the nature-culture divide as engendered by Descartes. However, in the purification process the ontological construction of nature necessitates an ontological construction of the cultural pole. Prior to this, the human or cultural pole of the divide sees itself as the sole protector of the Earth.

Through our ability to look objectively at nature as its protector, we can decipher the specific impacts that we are having on the opposite side of the nature-culture divide.

Indeed, an integral strategy that emerged out of the UNFCCC in Rio rested in the idea of scientific development. Signatory states were asked to report on the Co2 emissions and the progress that they were making with regards to reducing their individual state emissions (Jordan 1994). The commitment of states to report on their findings shows its necessity: "*All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances*" ('Paris Agreement' 2015, 6) It is thus in the hands of humanity and the cultural world to take on the responsibilities given to it as a result of its unique faculties of will and artifice. These varying 'national circumstances' depend on the extent to which the cultural-human pole of the divide has in part carried out its responsibility in protecting the processes of nature. Scientific research and communication, as a socially-constructed knowledge production technique, is the sole method capable of dealing with a global problem such as climate change and deciphering the extent of our responsibility on the climate system. Indeed we should *"[p]romote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change"* ('United Nations Framework Convention on Climate Change' 1992, sec. 4g). Only with the cultural pole's creation of a method to observe nature as outside can we carry out our responsibilities towards the climate system and eliminate the uncertainties. The solution that seems to be implied here is that a better understanding of how human activity has impacted climate change is required to contemplate the possibility of reversing these impacts or adapting to the changes that might ensue from irreversible damage.

However, this responsibility rests on the notion of nature as an amalgam of processes. Indeed if nature was on the same ontological footing as culture our responsibility might be mutual rather than conditional. Thus, climate change is reduced to the causes and effects that engenders its rapid deterioration. Indeed Agenda 21 highlights: "*The basic objective of this programme area is to improve the understanding of processes that influence and are influenced by the Earth's atmosphere on a global, regional and local scale*. *Accelerating, encouraging and enabling innovation is critical for an effective, long-term global response to climate change and promoting economic growth and sustainable development*" ('Agenda 21

1993, chap. 9.7). Indeed: "*Parties share a long-term vision on the importance of fully realising technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions*" ('Paris Agreement' 2015, sec. 10.1). Rather than questioning the divisionary method by which we approach the issue we must *accelerate* technological development based on the scientific data we have of these so-called static processes that engender climatology. Agenda 21 further highlights: "*Concern about climate change and climate variability, air pollution and ozone depletion has created new demands for scientific, economic and social information to reduce the remaining uncertainties in these fields*" (Agenda 21 1993, chap. 9.6). Indeed only through the lens of scientific research, that as a consequence reduces nature to a set of processes decipherable through causal mechanisms, can the human pole of the divide fully grasp the magnitude of climate change in order to find the perfect balance between the cultural pole. Indeed, "*[p]rotection of the atmosphere can be enhanced, inter alia, by increasing resource and materials efficiency in industry, installing or improving pollution abatement technologies and replacing chlorofluorocarbons (CFCs) and other ozone-depleting substances with appropriate substitutes, as well as by reducing wastes and byproducts*" (1993, chap. 9.16). Nature as a static outside entity cannot resolve the burdens humans have placed on it through a set of complex processes and interrelations; in this sense it must be protected. The solutions, therefore, are only available to the human with a will and artifice thus reflecting the ontological facet divide. We must find *substitutes* and reduce *waste* and *byproducts*; terms usually applied to objects rather than subjects. Even the table of contents of Agenda 21 indicates this: section II.9,11,12, and 13 are titled "*protection* [...], *combatting* [...], and *managing"* respectively. Thus, not only does it reiterate a hierarchy by arguing that the human pole of the divide is not only responsible for but the only actor that can prevent climate change through the objectification of these natural processes, it recognises the existence of a certain divide through its perception of nature as an amalgam of processes needing to be 'managed'. We must combat and manage, nature will not manage itself.

While the purification process resembles a humble and caring responsibility in its task to protect the processes of nature which seems to resemble the paradigm's creation of a 'new reality', at its root the very act of being conditionally responsible reinforces the basic tenets of the nature-culture divide. "*Industry is essential for the production of goods and services and is a major source of employment and income, and industrial development as such is essential for economic growth. At the same time, industry is a major resource and materials user and consequently industrial activities result in emissions into the atmosphere and the environment*

as a whole" (Ibid). Indeed the chronological importance of industry in this passage perhaps highlights that this responsibility we put on the human pole, as a result of our understanding of nature as a process, is paradoxical. Our willingness to act environmentally can only fit within the essentials needed for economic growth as a central tenet of the cultural pole. We must therefore reduce our emission "*into"* (rather than within) nature, only to the extent that nature is a prisoner at our service, suited for the human to fulfil their needs. Hence, this notion of the realist ghost inside the nominalist machine reemerges; the economic system, like the social contract and the scientific method, have allowed us to create a seemingly universal and monistic set of systems with clear boundaries and guidelines capable of predicting its impact on nature. This system, as is evident in the previous passage, makes it impossible to question the central tenets of this masqueraded realism, evidently leading to a paradox and confrontation between the cultural pole and the natural pole as amalgam of processes. Indeed, like Descartes' dualism, the metaphysical importance of contingency reemerges. Humans are free and reasonable because humans were made this way by God. Since Descartes was indeed writing in the pre-industrial period where the socio-cultural manifestations of modernity were different than today, the problems that we face now, and the narrative deemed necessary, was different; Descartes did not live in the Anthropocene. Yet the similarities remain striking; Nature is seen as a prisoner to its human master because of this will and artifice stemming from the divide. Whereas Descartes concluded that we should do as we see fit with nature, he did not live within an epoch where humans had the capability to alter their world to the extent that we do now[4]. Nonetheless, understanding the *processes* of the natural world in order to *protect* them in the industrial age continues to see nature as a prisoner of the human world, thereby reifying the nature-culture divide; What the Brundtland Report, Agenda 21 and the Paris Agreement 27 years later tells us is that nature is a prisoner that we must treat with respect, subject to human will and artifice. We must feed it, not overwork it, give it adequate rest, and yet it remains under our guardianship or custody. We can look down upon it from our guard tower, to see how our commands change and alter its otherwise predictable and static behaviour. For the dominant SD paradigm evident in the previous passages, if we do not understand the limits of nature as an amalgam of processes through the scientific method only grasped as a result of human will and artifice, the production capabilities needed for economic development may be severely impacted as they have been as a result of our loss of control.

[4] See (Mbembe 2022) for a clear discussion of the role of technology in blurring the lines of the relationship between nature and culture through modes of existence in light of the Anthropocene. Also see (Stiegler 2018) for an interesting analysis on the relationship between cultural adaptation to technological advancements.

This control perpetuated by the scientific method needs to be maintained in order to maintain our control over the static processes of nature. Above all, a purification and division remains, even with seemingly good intentions. Thus to the extent that a hierarchy between the two poles emerges in the SD paradigm, it strongly reflects Cartesian notions of dualism. The human system through the scientific method, the financial system, and the social contract, is a set of seemingly untouchable realities that the SD paradigm also takes for granted, leading to the reification of the divide.

With the influence of Descartes as a backbone, one can see how the SD paradigm perpetuates the divide as a response to the climate crisis. Not only does it ontologically divide the two poles, but it also reflects a power structure in the process of purification. It subtly tries to maintain the power structures that exist within the divide, or at least implicitly and subliminally fails to let go of them through purification. The natural pole of the divide is seen as an amalgam of processes that the human pole of the divide must protect.

Spillover: Cartesian Hybridity in Sustainable Development

Through this purification process, one can also clearly see the attempt at hybridity in these passages. Firstly, the notion of development is reduced to causal mechanisms, resembling the ontological construction of nature in the purification process. The following passages highlight this well: "*Each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include [...] Building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources*" ('Paris Agreement' 2015, sec. 9.e). As such the notion of development also adopts mechanistic characteristics through the notion of 'planning processes' built through 'resilient' socioeconomic and ecological systems, casting both the cultural and natural poles under the same shadow. Latour might argue this reduction is used to reify the invincibility of the modern constitution with the nature-culture divide as its central tenet. Another central passage highlights this reduction of the cultural pole in the process of hybridity: "*The basic objective of this programme area is to improve the understanding of processes that influence and are influenced by the Earth's atmosphere on a global, regional and local scale, including, inter alia, physical, chemical, geological, biological, oceanic, hydrological, economic and social processes; to build capacity and enhance international cooperation; and to improve understanding of the economic and social consequences of atmospheric changes and of mitigation and response*

measures addressing such changes" (1993, chap. 9.7) Evident in this passage is the merging of the socio-econimc and the environment under one issue, mixing the chemical and physical with the economic and social *processes*. As such these social processes, rather than influencing the Earth's atmosphere, are themselves processes influenced by the former. In essence, only by reducing the economic-human realm to a process can it spillover into and impact the natural processes that lead to climate change; there must be an interrelationship present at the ontological level to make a coherent and legible claim that there is an issue to resolve. In Latourian terms, it is not the recognition that the human world is constructed that leads to the possibility of a causal link but rather the deductibility of it to a static mechanism.

SD also treats nature as a complex set of actors; although still in a scientific way that denies the possibility of relationality amongst the different entities in nature. While, this in essence is a warrant to ramp up scientific research to understand and protect the processes of nature, it tries to adhere to the idea that 'nature works in mysterious ways: "[...] *the future is uncertain, and there will be surprises.* [...] *The global environment is changing more rapidly than at any time in recent centuries; as a result, surprises may be expected*" (Ibid, chap, 35.1); hence the necessity to give power to the scientist as a producer of knowledge in the quest to build a sustainable future for the needs of the next generation. If we return to the previous passages, the necessity to understand the causes and effects of climate change implies a complexity in interaction. We must address the *changes* that result in human interaction with its surroundings; changes that we have lost control of; For SD, it is because we do not yet have technological capacity to fully understand the impact on our surroundings. In this sense, recognising the impact of human activity on the climate system places a sort of artificiality on the latter. It recognises that complexity emerges through change. Therefore, to the extent that the climate crisis is a result of human action, it is subjectified; our capacity of will and reason has led us here, and therefore the climate crisis necessarily involves an understanding of this will and reason in order to accurately predict climate trends. Because the human world is constructed, its impact on the climate system therefore involves an element of construction. "*Concern about climate change and climate variability, air pollution and ozone depletion has created new demands for scientific, economic and social information to reduce the remaining uncertainties in these fields*" (Ibid). This concern is a direct reaction to the spillover of human action into the natural realm. Again, however, for a spillover to occur, a separation must precede. A recognition of these uncertainties thus remains an integral part of understanding the potential paradox of 'fulfilling the needs of present generations without compromising those of the future'.

Through (un)intended hybridity and mediation, I argue, development as the central goal of the cultural pole of the divide, thus adopts a capability to become a variable in the causal link between the natural and itself. In this process of hybridity, the SD paradigm also takes into account the complexity of nature. Thus, as the nature-culture divide would try to uphold, when confronted with critique, the simple answer is 'everything can be established through causal links' or 'the science tells us there is a link between the economic system and the natural system' or 'nature works in mysterious ways'.

Purification and Hybridity: The Cartesian Oxymoron

Yet in this hybridity of the two, the purification process remains clear; had the human pole not been able to impact the climate system, it would remain static. Only out of a supposed interaction between the two poles can the climate system adopt a constructed element. This ontological construction that leads to interaction or integration necessarily involves a process of purification; something cannot integrate into itself, it must be separate prior to integrating. This is clearly a reflection of the Cartesian method. While Descartes propels the divide, he argues that his delineation stems from God's will and hence the notion that it could have been willed otherwise. The cultural pole's assumption of will and artifice of the human as such exists only as a consequence of the order and nature of things. It thus allows us to create artificial systems or social imaginaries, such as the scientific method or the capitalist market that reify this notion of a realist ghost inside a nominalist machine through the process of hybridity as indicated above. Only through the adoption of the ontological construction of the other pole can both poles enter in a state of hybridity with the other in the SD paradigm. For the modern constitution to be 'invincible' the natural from time to time needs to be constructed, and the cultural ingrained in immanence.

In sum, through the clever engineering of the modern Constitution, the SD paradigm claims to be both new/old, realist/nominalist, and structuralist/constructivist all at once. What becomes evident with the aforementioned discussion is that climate change as a narrative is emblematic of the nature-culture divide ontologically and is a clear reification of it, despite its attempt to break away from the old notion of development and conceptions of nature. The grand narrative surrounding climate change still argues that while the processes of nature may change as a result of human action and intervention, due to nature's mechanistic characteristics, these changing processes will also become predictable and understandable through the scientific method and thus malleable to and hybri-dised with the current economic order. The idea of a teleos, inherent in modernity as mood, thus remains

ever-present in the SD paradigm through the notion of development itself but also through the idea that there is something yet to come; a perfect stage in which nature is respected in its prisoner status and the processes of this prisoner are understood, thereby allowing us to find the perfect equilibrium between development and resource use to maintain a perfect hierarchy in separation between the two poles. As my discussion of Hobbes and Boyle in Chapter 1 showed, the nature-culture divide as a central tenet of modernity encompasses complex knowledge production techniques that arguably lead to teleological conclusions. The question for the remainder of this project is thus: How does the SD paradigm divide utilise these knowledge production techniques that stem from and influence the ontology of the paradigm?

3. Modus Vivendi: the Epistemology of Sustainable Development

Having established the ways in which the SD paradigm as laid out in foundational and important texts pertinent to the international response to climate exhibits the main tenets of the nature-culture divide through the Latourian processes of purification and hybridity ontologically, I now turn to the way in which said paradigm epistemologically exhibits the latter two. With the split in the 'study of' in Chapter 1 I established a critical split in the study of the social world and the study of the natural world as emblematic of the divide emerged over time. To recapitulate, Hobbes was seen as the social scientist *par excellence* and Boyle the natural scientist in the same fashion. The nature-culture divide thus ordered the way in which the two poles must be studied. The main question of this Chapter asks in what ways does the SD paradigm, appropriate the split in the 'study of' in its attribution of the two techniques of knowledge production to the central tenets it propels, that Latour evolved overtime as a distinct modernist practice? I argue that SD gives a space for both knowledge production fields to operate by attributing the definition of sustainability through the notion of *compromise* to the natural sciences, and development through the notion of *needs* and *goals* to the social sciences. In this sense, by attributing the study of a divided ontological reality to a divided set of knowledge production techniques, the SD paradigm reifies the way in which modernity has interpreted and used the work of Hobbes and Boyle by delineating the space within which these two knowledge production techniques can operate. Yet only with the merging of sustainability and development each defined by its own knowledge producer, does SD emerge through a process of hybridity.

Purification through Sustainability

In the purification process, the idea of sustainability is attributed to the natural sciences as a knowledge production technique. Indeed, in many instances the notion of sustainability is solely a problem for the natural scientist to solve (Kaul et al. 2022). The natural sciences is attributed this role, in turn, by defining the notion of 'compromise', important to the definition of SD. Redcilft perhaps best encapsulated these dynamics of knowledge production in the international response to climate change: "The idea of 'sustainability' is invoked in policy discourses, as speaking to objective scientific method, without the complications of human judgement. In practice it is routinely used as a way of guiding human actions. The very parts of the scientific tradition, which have driven forward the frontiers of knowledge heuristically, have imposed boundaries, taxonomies and categories on nature, and have been used to make judgements, which reflect human concerns and political interests" (Redclift 2005, 78). In Chapter 2 I highlighted how in the process of purification nature is seen as an amalgam of processes and I showed how this is an accepted ontological schema for SD and thus reflects the nature-culture divide. This is specifically the *boundary* or *taxonomy* that Redclift is referring to. Only the natural scientists with their techniques of knowledge production founded in this ontological division, can guide human actions and best define the course of action in light of sustainability. Again, this is most present in the central tenets highlighted in the UNFCCC, Agenda 21, and the Paris Agreement. Chapter 35 of Agenda 21, titled "Science for Sustainable Development"' highlights the following scattered throughout the Chapter: "*The sciences can provide this understanding through increased research into the underlying ecological processes and through the application of modern, effective and efficient tools that are now available, such as remote-sensing devices, robotic monitoring instruments and computing and modelling capabilities. The sciences are playing an important role in linking the fundamental significance of the Earth system as life support to appropriate strategies for development which build on its continued functioning.* [...] *Thus, the sciences are increasingly being understood as an essential component in the search for feasible pathways towards sustainable development*" (1993, chap. 35.1-2) If these passages are clear enough, the natural sciences, through increased research is not only a necessary field of knowledge production to achieve SD, but sufficient to understand the uncertainties about the climate. To achieve SD rather than traditional neoliberal economic growth, science becomes a necessary part of finding a compromise between 'the Earth system as life support' and development. To produce the *right* knowledge "*through increased research into the underlying ecological processes*" to

achieve SD, the scientist needs to be called upon as the main source of information to produce effective policy. Science thus addresses a central notion in the definition of SD: the notion of compromise.

This notion takes on two different yet interlinked forms; the idea that we must not compromise the needs of future generations, and implicated in this that we must find a compromise today. Thus science is left to draw the limits of these compromises based on the knowledge production techniques at its disposal concerning the processes of the climate system and nature more broadly. Indeed: "*One role of the sciences should be to provide information to better enable formulation and selection of environment and development policies in the decision-making process"* (Ibid). The natural sciences is necessary to 'formulate' what is in need of compromise in the decision-making process. Only with the right understanding of the climate system can we have a clear picture of what practices of development and growth must be halted and technologies developed so as to not compromise future generations. Through this notion of compromise science defines what is sustainable regarding the natural regeneration of certain natural resources but also the extent to which new technologies can be seen as sustainable in their resource use. Always already perpetuating the divide due to its foundational Cartesian assumptions about nature, it is willingly and openly given a primordial space within the conventions and frameworks that englobe attempts to resolve the issue, thereby making the case that it reflects the divide an even stronger one. By contrast, other knowledge production techniques like Indigineous or Aborigonal knowledge systems are given only rarely marginal spaces for which to express their views on the solutions to the climate crisis in light of development and growth. Murdoch and Clarke (1994, 117) highlight that "science is attacked for its ways of knowing nature; for its reductionist methodology, its mechanistic models and its dominative vision, which together underwrite a manipulative and exploitative relationship with the natural world"; a way of knowing nature which is clearly dominant and taken for granted in the SD paradigm, as the epistemic solution. These characteristics that make science prone to attack are rarely if ever questioned in the formulation of SD; not only does it assume a purification in its formulation, it fails to justify it and address objections like the ones Murdoch and Clarke bring to light. This is again quite reflective of the purification process of the divide.

Recall the discussion in Chapter 1 of the division between Boyle and Hobbes. While both were engaging with an attempt at a universal theory of knowledge production, the overarching mood of modernity over time attributed their knowledge production technique to a pole of the divide (Latour 1991). Behind the closed doors of the lab, figurative rather than

literal in this instance, the scientist discovers the truth about the natural world. If we are not within this figurative laboratory we only gain access to the truth through the communication of the latter by the natural scientist. It is in this sense that the outcry of Indigenous peoples concerning our relationship within and to the environment was never acknowledged or recognised; perhaps if Boyle was an Indigenous philosopher things might have been different. The SD paradigm, through its inability to question the notion of science as the only method of truth, thus clearly reifies the divide, epistemologically through its association with certain techniques of knowledge production to a necessary solution, that is, to both find a *compromise* and to not *compromise* the needs of future generations.

Purification through Development

Yet the human pole through its own knowledge production techniques is also attributed a central notion on the paradigm thus reiterating a purificatory process and the divide. The central aim of the human sphere and social sciences is indeed to identify the *needs* that necessitate a *compromise*, as is evident in the definition of SD. The ways to achieve such needs are themselves defined by the human pole of the divide through a close consideration of the developmental techniques of each state. More importantly an assumption is made when SD defines just how these needs must be met and through what calculations and measurements. The UNFCCC, as a central foundation highlights: "*Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions*" ('United Nations Framework Convention on Climate Change' 1992, 1). The notion of common but differentiated responsibilities speaks to the different economic and developmental capabilities that each state has based on their linear process of economic growth. As such, the UNFCCC defines three types of states: Annex I, Annex II, and non-Annex states. Annex I states include all highly developed countries and emerging economies notably Central and Eastern European states. Annex II states include only highly developed economies, while non-Annex states encompass all signatory (although not necessarily ratified) states (Ibid). The process, as such, is cumulative. Based on the socially-constructed state system, the mechanisms to achieve the needs of people rest on the capabilities, defined by the measurement of development, to define the goal and responsibility to achieve these that each state has. To the extent that development is the most important economic metric internationally, the notion of financial capabilities become central to

achieving SD needs and goals. The classification of states based on financial capabilities as opposed to, for example, rates of environmental degradation, again highlights that the human pole through social scientific thinking is attributed the power to define a central notion of SD. Indeed Agenda 21 highlights: "*Economic growth, social development and poverty eradication are the first and overriding priorities in developing countries and are themselves essential to meeting national and global sustainability objectives*." Science is not in and of itself a 'policy'. Within the context of SD, therefore, it is the human pole of the divide's role to apply this scientific data; this based on the ontologically constructed set of boundaries that iterates the human as the sole protector of itself and the climate system. Going back to Redclift's passage, it seems the same analysis can be applied if we replace the natural scientific with the social scientific. Indeed by replacing sustainability with *development*, and adding the 'complications' of human judgement as opposed to a nature without the complications of human judgement, the same taxonomy and the same boundaries are placed on the notion of development by the social scientist, as nature with the natural scientist.

Indeed, Murdoch and Clark (1994, 117) highlight: "what then happens is that the choice of evidence reflects prior ideological commitments." In this sense, in the very classification of differentiated responsibility and thus a difference in the degree to which one must strive to act on scientific data, a prior ideological commitment emerges that only the human pole can define. SD, through giving a space to the human pole, again reifies the notion of a masked realism within an evident nominalism to the extent that it does not question development as a strategy to meet said needs and goals based on scientific data but rather plays with scientific data to reflect some preexisting ideological commitments about the goals that each state should strive to achieve in light of the former. The society of states thus defines the course of action within their own taxonomy of development and economic growth, with the knowledge that the limits of natural science produces an appropriate and balanced course of action.

In this sense, through the construction of a state system, Hobbsian notions reemerge. Within the international system of states, the sole authority or Leviathan that defines the truth about humanity's goals and needs rests in the hands of the states as the unit of analysis of development. They are the sole proprietors of truth about the socially-constructed human world. They, therefore, construct what is *true to* the international system and the global economic order with the scientific data that is available to them. The idea of development and linear economic growth, itself attributable to a modernist mood, thus defines the needs and goals that states have but is also defined by them. Each pole sets its own knowledge

production boundaries, that both legitimate the other in setting boundaries for themselves. In this instance, development/growth defines within a set of socially scientific boundaries what goals emerge out of natural scientific knowledge pertaining to climate change. The Leviathan's ability to define these goals and needs thus clearly reflects a prior ideological commitment about the socially-constructed nature of the world order as a result of human will and artifice, thus reflecting the divide in its attribution of knowledge production techniques.

Epistemological Hybridity in SD

In this light, the SD paradigm speaks to both knowledge production techniques in a process of purification. What becomes evident is that without a purification of the knowledge production techniques that attributes the social to the social scientist and the natural to the natural scientist, the notion of SD that has been laid out so far cannot function. As Murdoch and Clark again highlight, "scientific solutions which focus solely upon the 'natural' world and social scientific solutions which focus solely upon the 'social' world will both fall short of requirements" (Ibid, 130). The notion of SD therefore only emerges from a technique of hybridity that rests upon a practice of validation of one knowledge production technique given by the other in the paradigm. "*Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development*" (1997, 1). Evident here is that SD itself recognises that these two notions merge. What it fails to do however is recognise that prior to the epistemological dimension of knowledge production, ontological presuppositions are present that strongly influence these knowledge production techniques; at least where the nature-culture divide is concerned. In other words, it does not question why we attribute one knowledge production technique to another. Thus, because it fails to take into account the fact that it is being distinctly prescriptive about the two poles, the knowledge production techniques for either seem to step around any contention and become invincible. SD thus reconciles the irreconcilable: infinite growth and knowledge about finite resources. The Brundtland Report in this fashion highlights: "*Poverty reduces people's capacity to use resources in a sustainable manner; it intensifies pressure on the environment. [...] A necessary but not a sufficient condition for the elimination of absolute poverty is a relatively rapid rise in per capita incomes in the Third World. It is therefore essential that the stagnant or declining growth trends of this decade be reversed*" (Brundtland and World Commission on Environment and Development 1987, chap. 2.29). Sachs (2009, 28) in this light highlights "Brundtland ends up

suggesting further growth, but not any longer, as in the old days of development, in order to achieve the happiness of the greatest, but to contain the environmental disaster for the generations to come." Hybridity in the instance of SD thus comes from a process of merging of two traditionally distinct knowledge production techniques. Whereas growth and development were a purely human endeavour prior to SD, in light of scientific data the two processes integrate into each other. Rather than considering one knowledge production technique in light of the other, both are incorporated into SD development, thus making the modern Constitution once more seemingly invincible. They reconcile the two by showing that a modus vivendi can exist between them for a better, common future. Because Boyle and his successors won the debate about the mechanistic processes that engender nature and the ways one must study it, developmental practices cannot leave out the data that emerges out of the natural sciences and the changes to the climate system that are ongoing. In light of the dominance of the natural sciences in deciphering truth about the non-human world, itself already dichotomous, development must integrate the truths that science deciphers. The SD discourse is thus inherently modernist and dichotomous in its hybridity through its incorporation of science as the new metric of measurement for the same old development and economic growth.

SD thus incorporates both knowledge production techniques, perfectly encapsulating an epistemological hybridity thus reifying the nature-culture divide. This is in stark contradiction to previous forms of development that disregarded the scientific claims about nature and the climate in its central tenets. Yet it continues down the same route through the purification process it engenders; it remains dichotomous in the ways in which it attributes knowledge production techniques to specific issue areas surrounding the divide. In addition, these issue areas are either attributed to sustainability or to development thus making the purification process that precedes hybridity inherent in the paradigm all the more reflective of the divide.

Conclusion

If we are to find an adequate solution and build effective policy for the environmental problems, we must recognise the presence of these overarching assumptions in and on our discourses. As I discussed in my introductory remarks, many of the problems we face today, while difficult to solve, can be resolved within the frameworks already established. In other words, the fundamental assumptions that we often fail to question do not need questioning in the same manner because they work within pre-existing order. Indeed, I hope my project has

shown how the divide and its presence in the SD paradigm is deeply problematic to building effective climate policy. These meta-narratives are so deeply ingrained that changing them becomes an almost impossible task. The nature-culture divide is not specific to the international response to climate change but to our own classification and knowledge production techniques as individuals or small-scale communities. All of us continue to see nature as separate to the human world, consciously or subconsciously. While identifying the problematic nature of these assumptions is important in an abstract fashion, pointing to their presence is just as important if practical implications are to ensue. The development of techniques throughout time always necessitated an adaptation of culture to technique. This is because the human is paradoxically innovative yet reluctant to change (Stiegler 2018). As all well intentioned projects go, the SD paradigm remains an attempt at a cultural adaptation to the rapid evolution of technology with the drastic environmental consequences that ensue from the latter. To give at least some credit to SD, it is indeed a good try at attempting to build a framework from which culture can adapt to the evolving impact that human innovation is having within the environment. Yet in trying to build new realities it fails to recognise the old one's still ingrained in us, making the nature-culture divide difficult to abandon. To truly build 'new' realities, we must first understand the 'old' ones. SD therefore reifies certain realities which the Anthropocene and the literature stemming from it has shown us are no longer possible. Indeed the question is not about new or old realities but *necessary* realities.

Therefore, What I hope has become clear is that the SD paradigm is a stark reiteration and reflection of the nature-culture divide. A reflection which reiterates old and unnecessary realities. It utilises the same technique that Latour argues are used to reify the divide in the dominant discourse. In Chapter 1 I highlighted these techniques through an analysis of Descartes as ontologically constitutive of the divide. I also looked at Hobbes and Boyle although strictly regarding the split in knowledge production technique that emerged as a result of their debate. This framework was mostly influenced by Latour and his processes of purification and hybridity specific to the perpetuation of the nature-culture divide. In Chapter 2 the ontological dimensions of the divide clearly emerged through an analysis of some textual evidence from foundational texts pertinent to the international response to climate change. I argued that in its ontology, SD perceived nature as an amalgam of processes and culture as the protector of these processes which not only reflected a dichotomous relationship but reflected a clear hierarchy in purification based on will and artifice; a clear reification of Cartesian dualism. In Chapter 3, I showed how this was propelled through an attribution of knowledge production techniques to specific facets of SD. I argued that the SD paradigm

clearly reflected what, through the development of modernity, Latour argued, was a division of the study of social and natural phenomena. SD clearly attributed the definition of sustainability and all that is 'natural' to the natural sciences, and all that is cultural to the social sciences. SD through the integration of sustainability to the notion of development clearly reflects a process of hybridity founded on the purification that precedes it. Through these processes of purification and hybridity by which SD perceives the poles, it is a stark reiteration of what Latour described as the 'Modern Constitution'; one which is no longer adapted to the present realities, and which I hope to have shown need to be reconsidered in light of the Anthropocene.

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