

Political Liberalism and the Scientific Claims of Religion

The Case of Darwinism vs Creationism

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I, Cristóbal Bellolio, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Acknowledgments

I began this PhD project roughly four years ago. Originally, I intended to write on whether there was any right to be free *from* religion, beyond the more traditional freedom of religion. In this context, I was particularly interested in children who might be undergoing a type of religious indoctrination in tension with the demands of liberal justice. After a few months, I focused my research on a specific kind of curricular debate: that of scientific education. I am indebted to my principal supervisor Cecile Laborde for spotting (while we were discussing Thomas Nagel's paper on Intelligent Design) that this was an area that combined all that was needed for a long-term project: a topical issue, relatively underexplored terrain, and my growing interest in the impact of scientific discoveries on the philosophical plane. It was Cecile who sent me for a six-month intensive reading in Darwinism, enabling me to grasp the many aspects of the evolution vs. creationism controversy. Throughout these four years, Cecile has been an invaluable source of intellectual support, academic advice and methodological guidance. Even in these last months, with her having taken up a new position at Oxford, she has never stopped being a demanding and rigorous supervisor.

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I would like to thank Charles Darwin too. As I hold degrees in law, politics and philosophy, my knowledge about life sciences was scarce prior to this research. Now I do not think you can discuss these issues separately. This thesis is not the end for me and Darwinism. New avenues for future work unfold. This is just the beginning.

Oddly as it sounds, I want to thank Brexit and Donald Trump. Four years ago, there was little conversation about post-truth and alternative facts. Brexit in the UK and the presidential election of Trump in the US put these journalistic notions into the headlines. As the reader will notice, much of this thesis overlaps with questions about the legitimacy of holding allegedly false factual claims in political debates. Are governments and political agents obliged to tell the truth? Is this truth determined by scientific means? If not, what other intersubjective methods do we have in order to evaluate such claims? These questions are far from novel, but they have gained unusual salience in public debates because of Brexit and Trump. My theme was topical before; it is even more so nowadays.

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Abstract

Political liberalism is said to be neutral between what John Rawls called comprehensive doctrines. These doctrines are usually defined by their ethical and philosophical claims. However, how political liberalism should address factual disagreements in pluralistic societies is less clear. This is the broader question that this work aims to tackle. At a more specific level, the normative question is how liberal institutions should deal with factual claims put forward by religious traditions and communities.

I take evolution vs. creationism as a case in point. While the former is a widely-accepted theory within scientific circles, the latter is advocated by religious groups in the US and elsewhere. The question is thus whether the liberal state can legitimately enlist its educational resources to teach Darwinism and exclude creationism as the true story about our origins.

To this, creationists claim that (a) as Darwinism is a philosophically naturalistic doctrine, its exclusive teaching violates the promise of liberal neutrality to the detriment of non-naturalistic worldviews; and (b) liberal institutions – from courts of justice to educational boards and executive officials - are promoting a materialistic understanding of the scientific project by arbitrarily disallowing supernatural hypotheses. Accordingly, the best way to honour both metaphysical and epistemological fairness is to treat evolutionary theory and its foes in a balanced way within the framework of mandatory scientific education. Hence, the Creationist Claim (CC) is advanced as a logical implication of political liberalism's purported impartiality.

The first part of this thesis addresses three arguments that liberal theorists have articulated to dismiss CC: (i) Darwinian evolution is just a scientific theory, (ii) religion should not address matters of factuality, and (iii) science cannot handle supernatural hypotheses by definition. But these replies are unconvincing. I argue that Darwinism can be suitably presented as a partial worldview; that most religious narratives incorporate factual claims; and that theistic hypotheses should not be excluded from the purview of science under the guise of a purely methodological naturalism.

Nonetheless, this does not mean that creationism should be taught in the biology classroom. The second part of the thesis aims to provide a public justification for the exclusive teaching of Darwinian evolution. After distinguishing between two stages of liberal neutrality, I argue

that the state is legitimated to adjudicate between competing factual claims through fair procedures, an adjudication that is indifferent to the naturalistic or supernaturalistic character of the hypotheses.

Two justificatory strategies are then pursued. The first reconstructs the problem by mimicking the conditions of the Rawlsian Original Position, tracking the educational goods that every citizen under the veil of ignorance would sign up for. It concludes that a commitment to the aims of a broadly liberal education leads to the notion that every future citizen is entitled to an adequate degree of scientific literacy, which includes an understanding of the most fundamental idea in life sciences: evolution. The second appeals to Rawls's suggestion that public reason encompasses the uncontroversial methods and conclusions of science. After addressing several possible objections, I conclude that scientific reasoning is a paradigmatic case of public reasoning, thus suitable for the aims of liberal public justification. Further, it offers a theory to think about scientific reasoning as an extension of everyday reasoning and common sense, a crucial assumption from which we can assert epistemic shared grounds.

As a conclusion, this thesis argues that factual disagreements – such as the one that divides pluralistic societies over cosmic narratives - should be addressed by liberals within parameters of public justification, because this is the best way to show respect to all citizens. The scientific claims of religion might well be discarded, not because they are religious but because they fail to provide evidential support in a world in which scientific reasoning works as public epistemology.

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Glossary of Acronyms

CC: Creationist Claim

CS: Creation-Science

ID: Intelligent Design Theory

MN: Methodological Naturalism

NAN: Non-Adjudicative Neutrality

NE: Naturalized Epistemology

NOMA: Non-Overlapping Magisteria

OPS: Original Position Strategy

PAN: Procedurally-Adjudicative Neutrality

PBR: Parental Basic Right

PRS: Public Reason Strategy

SCR: Scientific Claims of Religion

SEB: Scientific Epistemic Baseline

TS: Theistic Science

“There is grandeur in this view of life...”

Charles Darwin, *On the Origins of Species*

The heavens declare the glory of God;
The skies proclaim the work of his hands

Psalm 19:1

“Give physical objects in general,
the natural scientist is the man to decide
about wombats and unicorns”

W.V.O. Quine, *Word and Object*

I

Introduction

Political liberalism, as it is commonly stated, aims to treat different worldviews, lifestyles and deeply held moral convictions within pluralist societies in a *neutral* way. This means that the resources of political power should not be enlisted with the intention to promote or hinder competing conceptions of the good when these are controversial. If they are reasonable enough, these comprehensive doctrines –as they were labelled by John Rawls- can peacefully coexist under a general scheme of political justice and liberal rights, where these are endorsed by all. Adult citizens cannot only embrace these religious or philosophical worldviews themselves, but they are also free to communicate them to their offspring by means of education. In sum, by being impartial in this specific and qualified way, political liberalism is treating its citizens with equal respect.

Most versions of political liberalism assume that this requirement of neutrality applies over competing comprehensive doctrines and not necessarily between factual disagreements. After all, in which meaningful sense could the rules of liberal justification be suitable to settle non-moral disputes? Indeed, Rawls seemed to think that both types of disagreements worked differently. In his framework, whilst argument drawn from substantive and disputed conceptions of the good are excluded from political deliberation, scientific truths can be rightfully invoked when discussing constitutional essentials and public policies crucial to the basic structure. For the purposes of political justification, Rawls believed, “we are to appeal only to presently accepted general beliefs and forms of reasoning found in common sense, and *the methods and conclusions of science when these are not controversial*” (2005: 224) Italics are mine. Accordingly, it appears that some non-moral claims such as scientific theories enjoy a privileged epistemological status under the rules of Rawlsian liberalism, as if factual disagreements were not revealing far-reaching discrepancies in need of the same justificatory effort.

However, attempts to justify such a privileged status for scientific truths at the expense of morally controversial doctrines face an uncomfortable challenge when there is a connection between both levels. Most theistic traditions uphold a series of factual narratives that are meant to support further metaphysical and ethical claims. Questions about the origin of the universe, the underlying order of the cosmos, the grand history of life on Earth, the

emergence of human conscience, the quantum indeterminacy of matter, to mention just a few, are constitutive - but by no means exhaustive - of the ancestral religious quest for ultimate answers. We know for an empirical fact that scientific inquiries into these sensitive corners have the potential to shake theological versions. If there is indeed continuity between the moral and the non-moral scope, liberals have reasons to fear that the Rawlsian distinction between scientific plain truths and comprehensive worldviews might be untenable. Perhaps, to be consistent, political liberalism should extend its commitment to neutrality from matters of morals and metaphysics to epistemological and empirical disagreements about what is to count as trustworthy knowledge. Perhaps, to remain impartial in the relevant sense and show equal respect to all citizens, political liberalism should leave room for religious accounts next to scientific ones when it comes to factual disagreements.

This is especially topical in the so called curricular debates, in which the liberal state is enforcing the teaching of natural sciences. Nowhere is this problem more salient than in the creation vs. evolution controversy, in the US and elsewhere. In environments where religious allegiance is widespread, a substantial portion of the population pleads for a mandatory school curriculum that -at the very least- includes some critical views to Darwinian evolutionary theory, a scientific account about human origins that these groups deem to be antithetical to their worldview. Political theorists and philosophers of religion -prominently Thomas Nagel and Alvin Plantinga- have articulated this claim against the backdrop of liberalism's purported commitment to neutrality. Although not all the proponents of this idea are Darwin's head-on sceptics, for the purposes of this work I will refer generally to this view as the Creationist Claim (CC).

The CC is presented as twofold, with a substantive leg as well as a rather epistemological one. The substantive leg goes as follows: Darwinian evolution is the paramount expression of naturalism, a comprehensive doctrine that opposes theism. In such a capacity, Darwinism is not value-neutral, as most scientists attempt to portray it. Rather, it is an ideological belief which states that all phenomena can be reduced to random material processes. As political liberalism is supposed to be impartial toward competing comprehensive doctrines, the (exclusive) mandatory teaching of Darwinian evolution is consequently a violation of that very same commitment. Liberal education is then playing favourites in a cultural dispute, which is unfair per its own rules. In sum, liberals should acknowledge the subversive features of Darwinism, as many atheist writers have already done. Once they are ready to accept this internal contradiction, they must conclude that the only viable solution is to include

creationists' theories -as embodiments of an alternative worldview to naturalism- into the official curriculum.

The epistemic leg goes as follows: It begins by reasserting that theism cannot be confined to the realm of existential morals because it has an all-too-legitimate interest in uncovering the structure of factual reality and the history of spatiotemporal events. Undeniably, there are facts and events which are crucial to some religious narratives. However, liberal institutions are ruling that the systematic project of increasing human knowledge by exploring, describing and explaining factuality –in one word, science- should not even consider supernatural possibilities. Again, this would be inconsistent with liberal neutrality: political liberalism is opting for an epistemic filter that is structurally biased against a metaphysical assumption that is fundamental to much theistic belief: that God intervenes in the universe through acts of special creation and control. In brief, liberalism's notion of science is favouring atheism (at worst) or a version of non-interventionist theism (at best). Thus conceived, science cannot help but to be hostile to supernaturalism. Once liberals came to recognize the injustice of this epistemological rule, theories that suggest supernatural agency -such as creationism- should compete for the best explanation on an equal footing, and (possibly) be included in the compulsory curriculum.

Therefore, the CC concludes that political liberals are failing to uphold their own word: either by using compulsory education to *nudge* children into the Darwinian worldview or by enforcing the presumption that the only respectable cognitive means to reliable factual knowledge are naturalistic, political liberalism is anything but neutral. Therefore, it seems that the best way to honour both metaphysical and epistemological fairness is to treat evolutionary theory and its foes in a balanced way within the framework of mandatory scientific education, whether this means an *equal time* strategy or the more modest *teach the controversy* approach. As it stands, the CC is put forward as a logical implication of liberalism's purported philosophical neutrality. Though many of its claimants are not liberals themselves -it is hard to depict most of them as such- methodologically speaking their critique is an internal one. The aim of the following pages is to deliver a full response to this claim.

It is important to recall that the CC is but the flagship of a wider political challenge faced by liberal democracies. The big question is how political institutions should handle factual and *prima facie* non-normative claims that defy mainstream scientific views, while remaining faithful to the notion of equal respect to all citizens. It might be the case that a similar framework should be used to deal with climate change deniers or promoters of 'alternative

facts'. But the aim of this thesis is more limited. It is expressed in its title. Here, by the scientific claims of religion (SCR) I mean any claim that religious communities and theological traditions -particularly theistic ones- put forward to provide an understanding of factual phenomena. The CC is perhaps the most famous species of the genus SCR. But it does not exhaust the category. Geocentric beliefs were perhaps the notable case in earlier centuries. At the same time, not every SCR is at odds with the scientific consensus. Theologians were quite happy about the Big Bang theory: it meant that the universe had a beginning, therefore -they believed- a first mover. In turn, there is secular resistance to climate change theory and mandatory vaccination programmes, for instance. The SCR is thus not defined by its irrationality or its scientific marginality, but by its content: it affirms (or at least strongly suggests) special supernatural causation throughout the cosmos. As it should be clearer later, this is not to endorse the idea that religion should be treated as a scientific hypothesis and all its claims be subjected to evidential assessment for confirmation or rejection. Religion has many faces. SCR constitute just one of them. They stand for any theory that indicates the probability of supernatural action.

1. **Synopsis.**

The thesis is structured in eight chapters, including this introductory one. Part I -which comprises chapters II, III and IV- reviews the most common replies in liberal literature to the CC. They are mainly three:

- i) The Asymmetry Objection. It states that Darwinian evolution cannot be counted as a fully naturalistic philosophy in the same way as creationist theories do amount to surreptitious religious teaching. Although this objection acknowledges that fundamentalist sects in major theisms still reject evolution, it outlines that moderate believers have concluded that evolutionary biology does not refute religion. Hence, Darwinian evolution and creationism are not in symmetrical position, as the substantive CC suggests.
- ii) The Non-Overlapping Magisteria (NOMA) Objection. It states that it is a category-mistake to take religion as another competitor in the cognitive project of developing scientific knowledge about the world. Science and religion

represent two distinctive domains of teaching authority which do not overlap with each other. Hence, the content of the biology curriculum or any other scientific subject -like theoretical physics- could never be a real threat to the true religion. Therefore, the CC would be utterly misplaced.

- iii) The Methodological Naturalism (MN) Objection. It states that science is an intellectual endeavour with a series of epistemic rules. Among these rules is the one that prevents godly hypotheses to be posited as possible explanations for factual phenomena. As some theorists in the demarcation tradition argue, science only deals with natural causes by strict definition. Crucially, insofar as science is not issuing any verdict on the plausibility of divine agency *in toto*, it remains neutral in the relevant metaphysical sense.

These three arguments to reject the CC are promising but ultimately fail. The same chapters II, III and IV include responses to each of these objections, respectively. They run roughly as follows:

- i) Darwinian evolution is more than an aseptic scientific fact that explains the origin of biodiversity. It spills over into philosophical terrain because its inner logic and implications are deeply influential to the way we understand ourselves in the cosmic drama. Although it might lack the normative component that Rawls requires to describing it as a proper conception of the good, it does work as a starting point for a world-picture that, in many respects, contradicts (or at least constrains) traditional theistic interpretations. This way, Darwinism appears to be both a scientific truth and a (partial) comprehensive doctrine. The Asymmetry objection founders and the substantive leg of the CC stands.
- ii) While it is true that religious beliefs cannot be reduced to scientific hypotheses, most theistic traditions make claims about concrete facts and events that took place in spatiotemporal reality. As some of these claims are foundational to other theological beliefs -Christ's resurrection for universal salvation, for instance-, religious narratives cannot help but to insist in their factual veracity and evidential support. Simply put, religious discourse cannot be confined to the sole realm of values and morals. Therefore, it is entirely legitimate for theism to put forward distinctive non-materialistic hypotheses to account for particularly sensitive factual phenomena. NOMA should be thus discarded.

- iii) It is unfair to dismiss the possibility of supernatural causation even before starting to seek out the most competent explanation for a given phenomenon. By committing themselves to a principled or strong version of MN, liberal institutions are vulnerable to the charge of tacitly embracing a controversial view about causation and metaphysical probability, which is not consistent with their promise of philosophical impartiality. They would be assuming a world of closed materialistic self-sufficiency and non-intervening disembodied forces. Thus, the MN card cannot put the epistemic leg of CC to rest.

But if the standard liberal responses fail, should not we accept creationist answers to the question of origins next to orthodox evolutionary theory in the biology classroom? Should we bow to the force behind the Creationist's critique of political liberalism? Part Two -which comprises Chapters V, VI, VII and VIII- aims to develop an original answer to the CC that does not concede this point.

Chapter V reframes the way in which the principle of liberal neutrality should be applied in cases where there is disagreement over factual claims. In short, it proposes a two-tier model of liberal neutrality. At the first level, it states that public officials -whether in courts, legislatures or executive bodies- should refrain from adjudicating what types of agency and causation can be tracked by science as a broad epistemological project. This is not intended to bypass the controversial *demarcation problem* in philosophy of science, but rather constitutes an attempt to revisit it from the perspective of liberal political theory. Accordingly, it proposes that statements about the empirical traceability of the supernatural should be suspended at this first level. The crucial implication is that supernatural hypotheses cannot be ruled out by philosophical *fiat* from the quest to cosmic understanding. However, this does not mean that we should welcome any supernatural theory into the compulsory curriculum just for the sake of balanced treatment and political concern for the philosophical implications of the theories presented in the classroom. Thus, the second level of neutrality works as an essentially adjudicative process between competing factual claims, under the premise that political institutions should decide what should be taught to all with public resources. Although natural and supernatural hypotheses stand on an equal footing in the eyes of political liberalism -in the sense that we cannot judge their *prior* probability-, good and bad scientific theories do not merit equal treatment. Bad science should not be taught, not because it is religiously motivated, but because it is weak in explanatory terms or it has been already superseded. Therefore, we move from a territorial to a normative theory of

demarcation. Here, the key claim is that liberal institutions can adjudicate based on the *posteriori* plausibility of factual assertions by following a series of criteria that can be presented as neutral in a procedural sense. In other words, while first-level neutrality evokes the idea of negative neutrality, insofar it means refraining from evaluation in the name of metaphysical fairness, second-level neutrality is a form of positive neutrality to the extent that it appeals to a set of common epistemic rules for effective decision-making.

Now, the question is how any set of rules can be justified under political liberalism as standard for legitimate adjudication, since the privileged status that Rawls bestowed on scientific reasoning cannot be taken for granted. Chapters VI and VII delve into such a justification along two different strategies from the liberal repertoire.

The first goes by the name of the Original Position Strategy (OPS). Following Plantinga, creationists have suggested that, under the conditions of a fair liberal agreement, parties to the social contract would sign up for a right to prevent their children from being taught comprehensive beliefs that are contradictory to their own. If we bite the bullet that the evolutionary perspective could be depicted as a partial worldview, a liberal-constructivist approach would lead to the proposal that neither Darwinism nor creationism should be taught as the settled truth, but only *conditionally* to the parents' religious or philosophical backgrounds. Theories of strong parental rights, requirements of cultural coherence within communities, and narratives that highlight the value of social diversity support this tentative conclusion. Nonetheless, Chapter VI rules otherwise: citizens placed in a hypothetical original position under a veil of ignorance would choose to secure the learning of an accurate picture of the factual world, which necessarily includes the predominant trends and leading paradigms in life sciences. The OPS points that teaching mainstream evolutionary theory is ultimately mandated by liberal justice and individual rights, grounded on the normative conviction that fundamental educational goods should be equally distributed to all children and youngsters regardless of their parent's comprehensive doctrines. In turn, this conclusion is supported by some of the most salient theories of liberal and democratic education. Very roughly, these affirm that the purpose of schooling is to develop a capacity for autonomy and to create future competent citizens. Both goals presuppose certain intellectual baggage and cognitive abilities that are inseparable from the knowledge, skill and values that scientific reasoning pursues, such as the capacity to assess conflicting claims from an impersonal point of view as well as openness to changing one's mind when new evidence is found.

Chapter VII takes a slightly different justificatory route, this time in line with a Public Reason Strategy (PRS). Accordingly, scientific reasoning works as a paradigmatic case of public reasoning in the Rawlsian sense. This chapter argues that liberals are right to grant scientific reasoning the status of public epistemology since they recognize its capacity to mitigate sectarian biases and provide objective grounds for political resolution. Several objections are then entertained: that science has little to say in matters of fundamental justice; that scientific reasons are associational reasons and thus non-public; that the non-controversiality requirement rules out Darwinian evolution as public in the relevant sense; that by enthroneing science as public reason, political liberalism is endorsing scientism; that the idea of scientific facts as plain truths contradicts the notion of a truth-less political liberalism; that science cannot be defended on neutralist grounds but on perfectionist ones. Finally, that science is by no means neutral toward different comprehensive views but instead it stands for an epistemology as sectarian as any other. All these objections are managed in turn. Most of the replies rely on a distinction between the methodological virtues of an idealized version of science and the conclusions that emerge thus. I argue that liberals should defend science as a public way of thought independently of how challenging their findings are for the wider audience. To support this conclusion, this thesis presents an original reading of Rawls as heir to the tradition of naturalized epistemology (NE), for which scientific reasoning is continuous with everyday reasoning and common sense. From this assumption, the basic epistemic features that science exhibits are ultimately shared by all citizens regardless of their comprehensive allegiances. Science is therefore public in a liberal justificatory dimension.

A short final chapter closes with the implications that the arguments put forward might have for political liberalism. On the one hand, it suggests that liberals should think harder about the possible connections between facts and values, as it is implausible to hold that the former do not touch on people's fundamental beliefs. This being the case, factual disagreements should be treated within the liberal framework of public justification in the same fashion we think normative disagreements should be treated. This is the best way to honour the liberal promise of showing equal respect to individuals with different reasonable worldviews. On the other hand, it suggests that liberals should accept that the inclusion of scientific inputs into the political module might entail that some theistic worldviews will be constrained in their cosmic narratives. A political culture that assign science a privileged epistemic status in public justification will permeate the landscape of social diversity, including religious diversity. While Rawls regretfully accepted the unavoidable effect that political values will have for cultural pluralism, I shall argue that they are no (liberal) reasons for such regret.

Finally, to the observation that such an epistemically demanding liberal project might not be political but comprehensive, I conclude by defending its ecumenical character. As science is here depicted as an expansion of our natural capacities to navigate the factuality of the world, it emerges as a rational power that can be assumed in the same way that Rawls presupposes that individuals have two moral powers, say, a capacity for a sense of justice and a capacity for conception of the good. If political liberalism is thereby expressing a thin theory of the good, mine is expressing a very thin epistemic commitment.

2. Conceptual Clarifications: Evolution and Creationism.

Before proceeding, it is crucial to address some preliminary issues and points of clarification surrounding our case. Terms such as evolution and creationism are contested, so we need to begin by explaining what this research means when using them. A very brief history of the political and legal debates should be thus presented. The setting of most of this historical review is the US, but I intend to show that the theoretical and practical implications are worldwide. Darwin's findings have been particularly disturbing for Christian Evangelicals but also to Muslims, Jews and other religious communities. Hence, this is not an exclusive Bible-Belt issue.

So, what is evolution? It means different things to different ears. If the term describes the raw idea that organic forms evolve through time, then it is an idea that has been with us way before Darwin's and Wallace's conjoined findings.¹ At the beginning of the 19th century, one of the main theories available was Lamarckism, which stated that organisms modify their structures through their own lives to adapt to their environment, and those acquired characteristics were passed onto their offspring. Thus, the bare *fact* of evolution, as some people refer to it, has never raised much resistance. To begin with, most religious traditions are on board with the idea. Even Biblical literalists believe that God created different macro-

¹ As the tale goes, Charles Darwin was working on his idea of evolution by means of natural selection for twenty years after his voyage on the Beagle, but was rather reluctant to publish his theory for several reasons -religious among them- until he received a letter from another British naturalist, Alfred Russel Wallace. In that letter, Wallace shared with Darwin his own insights about the evolution of species and which were remarkably like Darwin's. This spurred Darwin on. In June 1858, they presented a joint article to the Linnaean Society of London, arguably the most important scientific paper in the history of biology. As Darwin was already on his way to writing *On the Origin of the Species*, he could publish the whole volume on the matter just fifteen months later. For a well-researched biographical account, see Janet Browne's two volumes of *Charles Darwin* (2002).

species and, within each macro-species, some change occurs. They call it *micro-evolution*. Therefore, evolution as mere gradual change through time is an overwhelmingly established fact, as the philosopher of science Michael Ruse adds, “no less than that Henry VIII’s daughter was Queen of England, and that a heart beats within my breast” (1998: 4). But the *theory* of evolution is something different. The theory addresses the causal mechanisms that drive such a change². It encompasses a variety of theses that, taken together, have come to be known as Darwinism. The preliminary thesis is not exactly biological but geological. Indeed, Darwin’s insights would have been impossible had geologists not reached a prior consensus on the age of the Earth. The scientific consensus nowadays is that our planet is roughly 4.6 billion years old. The ‘Ancient Earth’ thesis allows for the impressively long period that Darwin needed for his theory of gradual and imperceptible change to be plausible. Evolutionary theory as such begins with the ‘Descent with Modification’ and the ‘Common Ancestry’ theses. Both produce the image of an ungraspably huge tree of life where we are all genealogically linked. The popular myth that humans came from monkeys is usually inserted here. Of course, this is not the case. Instead, humans and monkeys share a common -and not very distant in evolutionary time- ape-like ancestor.³ We are indeed very closely related to chimpanzees and bonobos, as anatomical studies once intuited and genetics has later confirmed. Then comes Darwin’s truly original idea: the evolutionary process is chiefly moved by means of ‘Natural Selection’. Though neither Darwin nor Wallace had a very clear idea of how heredity worked, they suggested that when new offspring was produced, some mutations could occur. These mutations usually work to the detriment of their bearers, but rarely -depending on environmental conditions- they were beneficial for the purposes of surviving and reproducing. When this happened, these variations were passed onto the next generation. After a relevant number of generations, a population with new characteristics would emerge. This process, Darwin concluded, is therefore responsible for the apparent design in nature. Species were not a simple act of divine creation nor they were fixed; they were a long-term product of slow cumulative change.

Later, these ideas were confirmed by a myriad of auxiliary sciences. Palaeontology has given us innumerable fossils to explore the structural relatedness of all living things, including intermediary forms between different species. Embryology has revealed the gestation period

² Michael Ruse distinguishes between the *fact* and the *path* of evolution (1998: 1-16). The biologist Kenneth Miller refers to evolution-fact as *history* and evolution-theory as the *mechanism*, the *what* and the *how* (1999: 53).

³ As the biology educator Jerry A. Coyne recalls, “our lineage branches off from that of other primates only about seven million years ago, the merest sliver of evolutionary time” (2009: 30).

as a concentrated reminder of our evolutionary history. Genetics, built on the observations made by the Augustinian friar Gregor Mendel, has found the heredity unit that Darwin was so eagerly looking for. Now we know that some mutation happens randomly at a genetic level when DNA is copied, and natural selection operates by selecting or discarding a genotype depending on whether its phenotypic expression favours or disfavors the organism's fitness. Here, fitness basically means an ability to survive and reproduce in a certain environment. After Mendelian genetics, evolutionary theory was renamed as the Modern Synthesis or simply neo-Darwinism. In this work, I will use the terms evolution, evolutionary theory, Darwinism and neo-Darwinism interchangeably to refer to this core body of scientific knowledge.

Philosophical implications aside, this is first and foremost a theory that explains the origin of every single organism that has ever inhabited the Earth, including -of course- human beings. The key idea to bear in mind is that the mechanism of natural selection operates on two levels. First, random variation arises in the genetic material of individual organisms when such code is irregularly copied. This mutation has no relation whatsoever with the organism's present needs. Second, these hereditary variations are retained by the bearer if they prove to be beneficial for surviving and reproducing in each environment. Indifferent chance only operates at the first level. Here, chance means irrespective of the eventual benefit to the organism. The second level works by non-random accumulation of changes. Hence, neither survival nor reproduction is random. As it is sometimes put, natural selection is the non-random survival of random variants.⁴

As described, evolutionary theory is not under serious threat within the scientific community. It remains a *theory* in the sense that it represents a system of coherent and related ideas that have been tested and proved accurate, not in the sense that it constitutes an unproven hypothesis. Its predictive power has been confirmed repeatedly. It has been suggested that we might well speak about the *law* of evolution in the same way as we speak about the law of gravity. Evolution is a theory like the germ theory of disease or the atomic theory, both widely accepted. As it is usually stated by almost every biologist, evolutionary theory is a well-documented fact. The thought was succinctly captured when the celebrated scientist Theodosius Dobzhansky titled a paper as *Nothing in Biology makes sense except in the Light of Evolution* (1973). In this sense, neo-Darwinism recalls Thomas Kuhn's (1961) idea of what constitutes a scientific paradigm: it governs "normal science" without serious competitors

⁴ Coyne describes evolution by selection as "a combination of randomness and lawfulness" (2009: 129).

and it functions as an indispensable framework for any further research in the field. The evidence in favor of the current paradigm is so massive -and never proved inconsistent- that the philosopher Daniel Dennett felt entitled to affirm that “anyone today who doubts that the variety of life on this planet was produced by a process of evolution is simply ignorant – inexcusably ignorant, in a world where three out of four people have learned to read and write” (1995: 46). Of course, some internal discrepancies remain⁵. Evolutionary biology is a work in progress like every other scientific field. But the basics remain undisputed. Its conclusions are noncontroversial within the scientific community.⁶

What do we mean by creationism, then? It is possible to distinguish both a narrow and broad understanding of the term. The narrow interpretation traditionally covers what it has become known as Biblical creationism. Biblical creationists believe in the literality of the creation story told in the Book of Genesis’ first two chapters. That story is well-known: God created the heaven and the earth in six days, starting with darkness and light on the first day, and ending with the creation of mankind on the sixth day. On the seventh, He rested. Hardline creationists maintain that these were 24-hour days, whereas others believe that these are just metaphorical days and perhaps correspond to *stages* of creation that could have been much longer. In any case, Biblical creationism is usually associated with the idea that the Earth is a

⁵ To what extent the course of biological evolution is gene-centered is still under discussion. There are open inquiries on the role of alternative evolutionary-drivers like the theory of genetic drift or even sexual selection. In his day, the late US paleontologist Stephen Jay Gould criticized what he called Darwinian Fundamentalism, referring to the “conviction that natural selection regulates everything of any importance in evolution, and that adaptation emerges as a universal result and ultimate test of selection’s ubiquity” (1997: 2). His discrepancies with Richard Dawkins are sometimes highlighted by creationists to show that the theory is not consensual. Indeed, Gould had his differences with Dawkins and other evolutionary biologists regarding the path of evolution. Instead of *phyletic gradualism* -the idea that evolution runs smoothly and continuously through whole lineages (a process known as *anagenesis*)- Gould famously proposed the *punctuated equilibrium* hypothesis -the idea that species become stable after they first appear, only to break into different ones by rare and sudden events (a process known as *cladogenesis*). Notwithstanding these internal discrepancies, Gould was a full-blooded Darwinian in all relevant respects. See also Dennett, 1995: Ch.10; Miller, 1999: Ch.4; Brown, 1999: Ch. 3; Ruse, 2001a: Ch.1.

⁶ For textbooks on the workings of evolutionary theory, see Douglas Futuyma’s *Evolutionary Biology* (2013), Mark Ridley’s *Evolution* (2003) and Brian & Deborah Charlesworth’s *Evolution* (2003). For state-of-the-art defenses of Darwinian evolution for wider audiences, see Jerry A. Coyne’s *Why Evolution Is True* (2009) and Richard Dawkins’s *The Greatest Show on Earth: The Evidence for Evolution* (2009). Other important recent contributions are Neil Shubin’s *Your Inner Fish: A Journey into the 3.5-Billion-Year History of the Human Body* (2008), Francisco Ayala’s *Am I a Monkey? Six Big Questions about Evolution* (2010), Michael Ruse’s (editor) *Evolution: The First Four Billion Years* (2009) and Alice Roberts’s *The Human Story* (2011). Instant classics on Darwinism are to be found in Daniel Dennett’s *Darwin’s Dangerous Idea: Evolution and the Meaning of Life* (1995), Jared Diamond’s *The Third Chimpanzee: The Evolution & Future of the Human Animal* (1991), Richard Dawkins’s *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design* (1986), Stephen Jay Gould’s *The Panda’s Thumb: More Reflections in Natural History* (1980), Edward O. Wilson’s *Sociobiology: The New Synthesis* (1975), Ernst W. Mayr’s *What Evolution Is* (1964), among others.

very young planet, somewhere between 6,000 and 10,000 years old. This number has been obtained by calculating the generations that, according to the Bible, range from Adam to Abraham, at which point we pick up the lead. Thus, this strand is sometimes dubbed as Young Earth Creationism (YEC). Clearly, its proponents challenge modern-day biology as much as they challenge modern-day geology and other sciences. To have their views introduced into the science curriculum, Biblical creationists relabeled their views under the banner of Creation Science (CS). Importantly for our purposes, CS affirms that the Genesis account can be defended without resorting to faith alone but with rational and evidential - hence properly scientific- means⁷.

After a series of legal setbacks in the US, CS lost its steam and a new trend – the Intelligent Design movement (ID) - came to replace it with considerable media attention. ID theorists do not believe, like Biblical creationists do, that the Earth is only a few thousand years old, that God created every single species in their present form or that our similarities with higher apes are just apparent. Instead, they accept large portions of mainstream evolutionary theory. ID spokespersons are quick to distance themselves from CS, which they regard as an irrevocably doomed attempt to counter naturalistic evolution. As explained by their advocates, ID theory asserts that “certain features of the physical universe and/or biological systems can be best explained by reference to an intelligent cause -the conscious action of an intelligent agent-, rather than an undirected natural process or material mechanism” (Campbell and Meyer, 2003: 618). Specifically, they claim that Darwinian self-sufficiency is not able to explain the origin, development and diversity of life.⁸ According to ID theorists, orthodox evolutionary theory exhibits a series of gaps for which natural selection does not seem to be the best explanation. The argument for ‘irreducible complexity’ is perhaps the most cited to explain ID’s core claim. In brief, it states that some biological systems are so intricate and specific in their function -like the human eye or the bird’s wing- that it is highly unlikely that they could be the products of successive small modifications from pre-existing functional systems through natural selection, because they would not have performed any function until they are complete. So, *someone* or *something* had to design them for their present

⁷ It is commonly asserted -at least in the US- that CS’ foundational work is Henry Morris and John Whitcomb’s *The Genesis Flood* (1961). Morris and Whitcomb argued that radiometric methods to measure the age of the Earth were misleading because the legendary Noah’s flood altered the information that can be read in the rocks. Contrary to mainstream geology, they argued that fossils around us were laid down rapidly, thus leaving Darwinian evolution without sufficient time to act.

⁸ Legal and political philosophers are divided on whether ID is the same old creationism in disguise or it merits more serious consideration. Among the former, Eisgruber and Sager (2007) and Nussbaum (2008). Among the latter, Greenawalt (2005) and Nagel (2008).

function. As Darwin himself acknowledged that his theory would absolutely break down “if it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications” (2004: 92), ID theorists believe that they have found the definitive defeater to the evolutionary paradigm.⁹

Further, it has been said that ID has two sides: a *negative* or *critical* one -which targets the apparent blind spots and weaknesses of Darwinism- and a *positive* or *programmatically* one -that is supposed to explain how the evolutionary process occurred if not by purely Darwinian means. The latter is much less developed, if not virtually abandoned. It has certainly been easier to point to the discontinuity of the fossil record than to provide details of divine craftsmanship over matter. Although ID theorists do not explicitly attribute this top-down tinkering to the God of Christianity, they do speculate about divine intervention. In Michael Behe’s own words, ID is “theologically minimalist. It detects intelligence without speculating about the nature of the intelligence” (1996: 107). But most people believe that they are suggesting *His* participation. After all, the best-known activists and scholars of the ID movement belong to different branches of Christianity, such as Evangelicalism, Presbyterianism and even Roman Catholicism. As it were, they all stress that their conclusions “flow naturally from the data itself—not from sacred books or sectarian beliefs” (Behe: 1996: 193). For our purposes, they remain proud creationists in a broad sense: they endorse a providential account of the history of life in which a supernatural agency manifests itself through acts of special creation, while deeming nature as incapable of doing the whole job self-sufficiently.¹⁰

A bit trickier is deciding whether different forms of Theistic Evolution (TE) should also be regarded as creationists. Theistic evolutionists accept most of the Darwinian account. They disagree with CS in that the Bible has little to offer to modern scientific research, and they

⁹ Take biochemist Michael Behe’s confident statement: “The result of these cumulative efforts to investigate the cell is a loud, clear, piercing cry of *design!* The result is so unambiguous and so significant that it must be ranked as one of the greatest achievements in the history of science. The discovery rivals those of Newton and Einstein, Lavoisier and Schrödinger, Pasteur, and Darwin” (1996: 232-233).

¹⁰ Key readings in ID theory include Phillip E. Johnson’s *Darwin on Trial* (1991), Behe’s *Darwin’s Black Box* (1996) and William Dembski’s *No Free Lunch: Why Specified Complexity Cannot Be Purchased Without Intelligence* (2007). For a sympathetic account of ID theory and its core scientific tenets, see Francis Beckwith’s *Public Education, Religious Establishment and the Challenge of Intelligent Design* (2003). More critical portrayals in Robert Pennock’s *Tower of Babel: The Evidence against the New Creationism* (1999) and Barbara Forrest and Paul R. Gross’s *Creationism’s Trojan Horse: The Wedge of Intelligent Design* (2007). A superb compilation of articles against and in favor of ID may be found in Pennock’s edition of *Intelligent Design Creationism and Its Critics: Philosophical, Theological and Scientific Perspectives* (2001). Another worthwhile compilation is William Dembski and Michael Ruse’s (editors) *Debating Design. From Darwin to DNA* (2004).

disagree with ID in that God should not be sought in the shortcomings of mainstream evolutionary theory. As most TE theorists argue, God's creation is already perfect and it does not necessitate any top-down repairing. On the contrary, the creation would have been "gifted with all the self-organizational and transformational capabilities needed to make something like the macro-evolutionary scenario viable" (Van Till, 2001: 490). Indeed, it would not speak well of the designer's plan if those discontinuous and episodic interventions were needed.¹¹ Nonetheless, TE does stand for the belief in an all-powerful, all-loving and super intelligent mind who intends and guides the whole cosmic epic, including of course evolution. Progressive TE approaches do without the *interventionist* idea of divine creative action –because nature has already built in all the necessary potentialities to come about- but still want to retain the idea of a God who thoughtfully conceptualized our factual reality. To some extent, they do not want to give up the notion of a purposeful designer. In that dimension, it stands at odds with the anti-teleology that appears to be constitutive of the Darwinian account.¹² If we take creationism to encompass the whole gamma of views that hold that a deity had a substantial and directive role in the creation of the universe and life in it, TE should be included. In a broad sense, then, TE views are part of the extended creationist family.¹³

¹¹ As Van Till has insisted, "the Judeo-Christian theist should be inclined to have exceedingly high expectations regarding the character of creation's formational and functional economies" (2001: 507), thus without the need to resort to episodic acts of special creation in order to fill alleged ontological gaps -which are, in reality, only epistemic gaps to be filled with more scientific knowledge. The influential Anglican theologian -and biochemist- Arthur Peacocke shares the view that "we do not have to look for any extra supposed gaps in which, or mechanisms whereby, God might be supposed to be acting as Creator in the living world... The processes revealed by sciences, especially evolutionary biology, are in themselves God-acting-as-Creator" (2001: 474).

¹² The Austrian cardinal Christoph Schönborn -one of the most authoritative voices in the Roman curia when it comes to the creation vs. evolution debate- explained the crux of the issue in a polemic article: "The Catholic Church, while leaving to science many details about the history of life on earth, proclaims that by the light of reason the human intellect can readily and clearly discern purpose and design in the natural world, including the world of living things. Evolution in the sense of common ancestry might be true, but evolution in the neo-Darwinian sense -- an unguided, unplanned process of random variation and natural selection -- is not. Any system of thought that denies or seeks to explain away the overwhelming evidence for design in biology is ideology, not science" (2005).

¹³ As Michael Ruse defines it in the Stanford Encyclopedia of Philosophy, "at a broad level, a Creationist is someone who believes in a god who is absolute creator of heaven and earth, out of nothing, by an act of free will" (2014). Echoing CS Lewis's idea of *mere Christianity* -intended to encompass a set of common beliefs across different types of Christian faith- Darwinians doubters of all sorts can be united under the banner of *mere Creation* (Branch, 2014: 104). Phillip Johnson explains that people who believe "that the earth is billions of years old, and that simple forms of life evolved gradually to become more complex forms including humans, are *creationists* if they believe that a supernatural Creator not only initiated this process but in some meaningful sense controls it in furtherance of a purpose" (2010: 22). For Johnson, *evolution* in contemporary scientific usage excludes not only hardline but broad creationism. Instead, Van Till supports the idea that "all Christians are authentic creationists in the full *theological* sense of that term. We are all committed to biblically-informed and

To sum up, in the following pages I will be referring to creationism as a continuum of ideas that range from hardline Biblical literalism to general creation-based skepticism about Darwinian self-sufficiency to account for the biological structure of the world. Most theistic traditions shall be thus covered within this ample umbrella. All these views seem to endorse different but related versions of the old argument from design, also known as the teleological argument. In this sense, all creationists believe that the physical world and the natural order show evidence of deliberate and intended design, most probably from a divine figure. It seems reasonable, then, to think about the acceptance or rejection of teleology as the conceptual watershed, at least for operative reasons. While creationists assert that nature presents sufficient evidence of purposeful design, evolutionary theorists hold that -following Darwin- such design is only apparent. The argument from design echoes the old project of a Natural Theology, for which William Paley devised its most famous example: if we find a watch in a deserted beach, we will assume it was not assembled by itself but carefully designed. Creation is like the watch, said Paley, and therefore needs a designer.¹⁴

Of course, as it is expected with softer forms of creationism, TE advocates are less (or not at all) combative when it comes to opposing the exclusive teaching of evolutionary theory. This means that all theism is creationist but not all creationism is politically problematic. An account that abandon the idea of special acts of creation -thus abandon *interventionism*- will rarely inspire a battle in courts for a religiously-motivated scientific hypothesis. Less clear is the case of evolutionary progressivism.¹⁵ But, in general, theological accounts that see nature

historic Christian doctrine of creation that affirms that everything that is not God is part of a creation that has being only because God has given it being and continues to sustain it... This theological core of the doctrine of creation sets Judeo-Christian theism in bold distinction from both pantheism (all is God) and naturalism (all is nature)” (2001: 506).

¹⁴ The most iconic exposition of this argument was offered by the character Cleanthes in David Hume’s *Dialogues*. Cleanthes tries to persuade Demea and Philo -his listeners- about the force of the argument from design: “Look ‘round the world: contemplate the whole and every part of it: you will find it to be nothing but one great machine, subdivided into an infinite number of lesser machines, which again admit of subdivisions to a degree beyond what human senses and faculties can trace and explain. All these various machines, and even their most minute parts, are adjusted to each other with an accuracy which ravishes into admiration all men who have ever contemplated them. The curious adapting of means to ends, throughout all nature, resembles exactly, though it much exceeds, the productions of human contrivance; of human designs, thought, wisdom, and intelligence. Since, therefore, the effects resemble each other, we are led to infer, by all the rules of analogy, that the causes also resemble; and that the Author of Nature is somewhat similar to the mind of man, though possessed of much larger faculties, proportioned to the grandeur of the work which he has executed. By this argument *a posteriori*, and by this argument alone, do we prove at once the existence of a Deity, and his similarity to human mind and intelligence” (Hume, 1993: 45).

¹⁵ I am referring to one of the most noted accounts that attempted to make theism and evolution compatible. Still, many believers follow the Jesuit paleontologist Pierre Teilhard de Chardin’s ideas about a God-directed evolution in which God, as Creator, uses evolution to bring about his plan. However, at the same time, he

as fully-gifted and the whole concept of creation as a strictly metaphysical notion out of the realm of material causation are unproblematic for debates on the science curriculum. Even if they retain the idea of design, it is a design that operates at a different (non-material) level.¹⁶

3. A Worldwide Political Controversy

The record of the evolution vs. creation controversy within the educational system has been mainly US-centred. The legal drama began in 1925 with the *State of Tennessee v. Scopes* -the famous Monkey Trial- in which the school teacher John Scopes was prosecuted for deliberately teaching evolution in violation of Tennessee's ban on the practice. None other than the three-times presidential candidate William Jennings Bryan argued for the conviction, casting worldwide attention on the case. Although Scopes was sentenced, the story exposed creationists as irrational, religious fanatics.¹⁷ A significant judicial turn took place in 1968. In *Epperson v. Arkansas*, the U.S. Supreme Court ruled that an Arkansas law banning the teaching of evolution in public schools and state universities was breaching the Establishment Clause of the Constitution. Darwin was finally admitted into the science classroom. Although not strictly related, the *Lemon v. Kurtzman* case in 1971 was important because the 'Lemon test' has since been used by courts to hand down rulings in evolution vs creationism controversies. The tide changed completely after *McLean v. Arkansas Board of Education* (1982), in which a federal court struck down an Arkansas law requiring public schools to teach CS alongside evolution. This time, creationists were left outside the classroom. In 1987, *Edwards v. Aguillard* repeated: the US Supreme Court rejected as unconstitutional a Louisiana law requiring that creationism be taught along with evolution in public schools. The judges ruled that the law had an obvious religious purpose. The next two decades witnessed the efforts made by creationist groups to include disclaimers in official textbooks urging students to question evolutionary theory. Most of them failed in boards and courts. The most symbolic recent

defended a form of "orthogenesis" in which mankind will eventually evolve to the "omega point" of union with the Creator.

¹⁶ Some theologians and philosophers of religion believe that a correct understanding of the Vatican doctrine should not be along Schönborn's argument about the insufficiency of Darwinism to fully account for life on Earth. Following Thomas Aquinas, these theologians assert that God operates through secondary means, therefore "no explanation of evolutionary change, no matter how radically random or contingent such an explanation claims to be, challenges the metaphysical account of creation, that is, of the dependence of the existence of all things upon God as cause" (Carroll, 2006: 5).

¹⁷ A much more nuanced and historically insightful recount in Gould, 1999: 150-170.

case took place in 2005. In *Kitzmiller v. Dover Area School District* -a case to which I shall return throughout this work- a federal district court struck down a School Board's requirement that ID theory be mentioned as an alternative to Darwinian evolution.¹⁸ Still, after all these defeats, polls show that the number of US citizens who endorse creationist views -both in a narrow and in a broader sense- is rather high¹⁹. Likewise, legislative efforts to introduce the idea that biological evolution is scientifically controversial continue to this day²⁰.

The fact that both media attention and academic interest have focused on challenges to the teaching of evolution in the US does not mean that the phenomenon is geographically contained. It takes place worldwide. In 2007, the Parliamentary Assembly of the Council of Europe issued a statement acknowledging that "creationist ideas are tending to find their way into Europe and their spread is affecting quite a few Council of Europe member states". It also warned that this trend should be treated as "a menace to human rights". Thereupon, it urged member states to "defend and promote scientific knowledge" and "firmly oppose the teaching of creationism as a scientific discipline on an equal footing with the theory of evolution"²¹. As Blancke, Hjerimitslev and Kjærgaard have researched, the aim of creationist movements in Europe is not very different from that of their North American counterparts, namely, "to influence educational policies and introduce alternatives to the theory of evolution in biology classes" (2014: 1). Though heterogeneous, marginal and fragmented, creationist movements have made it into the headlines -and sometimes even into educational establishments- in countries like France, Spain, Portugal, Belgium, Denmark, Germany,

¹⁸ The statement that teachers were required to read to their ninth-grade biology students read as follows: "The Pennsylvania Academic Standards require students to learn about Darwin's theory of evolution and eventually to take a standardized test of which evolution is a part. Because Darwin's Theory is a theory, it is still being tested as new evidence is discovered. The Theory is not a fact. Gaps in the Theory exist for which there is no evidence. A theory is defined as a well-tested explanation that unifies a broad range of observations. Intelligent design is an explanation of the origin of life that differs from Darwin's view. The reference book, *Of Pandas and People*, is available for students to see if they would like to explore this view in an effort to gain an understanding of what intelligent design actually involves. As is true with any theory, students are encouraged to keep an open mind. The school leaves the discussion of the origins of life to individual students and their families..."

¹⁹ According to a specialized survey, "six-in-ten Americans (60%) say that *humans and other living things have evolved over time* while a third (33%) reject the idea of evolution, saying that *humans and other living things have existed in their present form since the beginning of time...* About half of those who express a belief in human evolution take the view that evolution is *due to natural processes such as natural selection* (32% of the American public overall). But many Americans believe that God or a supreme being played a role in the process of evolution. Indeed, roughly a quarter of adults (24%) say that *a supreme being guided the evolution of living things for the purpose of creating humans and other life in the form it exists today*". See Public's Views on Human Evolution, Pew Research Center. December 30, 2013.

²⁰ Take the Missouri's House Bill 486, presented in the Missouri House of Representatives on January 13, 2015. It expressly aims to confer "academic freedom to teach scientific evidence regarding evolution" to teachers, adding that "the theory of biological and hypotheses of chemical evolution" are controversial.

²¹ See Resolution 1580 (2007): *The dangers of creationism in education*.

Greece, among others. More striking, in the last fifteen years, in places as diverse as the Netherlands, Italy, Serbia, Poland and Romania, acting ministers of Education have spoken against Darwinian hegemony in the science curriculum. In Russia, as in other nations of the post-Communist bloc, the rise of creationism has been linked to a backlash against decades of imposed materialistic scientism. Here, the Christian orthodox revival has been so radical in some quarters that a local historian of science suggests that “neo-clerical” Russia is “nearly a world leader of the anti-evolutionist campaign” (Levit, Levit, Hossfeld et al, 2014: 177). The honor is disputed though: a Dutch science commentator wrote an article asking whether Holland was becoming “the Kansas of Europe” (Enserik, 2005). Overall, statistics taken from populations in Latvia, Cyprus, Lithuania, Bulgaria and Greece show an acceptance of Darwinian evolution that fluctuates between 40% and 50% (Miller, Scott and Okamoto, 2006). Europe is not immune to this political controversy.²²

As one might expect, creationism movements are influential throughout the Muslim world, meaning Islamic nations as well as countries where there are large Muslim populations. Scholars have indeed warned that “the next major battle over evolution is likely to take place in the Muslim world” (Hameed, 2008: 1637). In Turkey, less than 30% believe that we developed from earlier species of animals. It has been reported that only 8% of Egyptians, 11% of Malaysians, 14% of Pakistanis and 16% of Indonesians agree that Darwin’s theory is *probably* or *most certainly true* (Hassan, 2007). In these milieus, reasons to reject the scientific consensus are mixed. For some sincere Muslims, the resistance is theological. The Quran presents a creation narrative which is like the Bible’s: Adam -who is basically the same character for the three main monotheistic traditions-, was the first man on Earth, directly created by God. Like Christian denominations, Muslims have struggled to come to terms with evolution’s core ideas, and they exhibit as much internal diversity as a response. But on the other hand, in countries such as Iran, Turkey and Saudi Arabia, evolutionary theory is often presented as a Western idea, a foreign ideological artifact that stands for values antithetical to Islam. Rather than fueled by scientific skepticism, this rejection follows well-documented sociological, identity and even geopolitical patterns. It would be part of a systematic strategy of cultural self-assertion.²³

²² The work of Ronald L. Numbers has been pioneering in this field. Numbers has been keen in the task of debunking the myth “that creationism is a uniquely American phenomenon” (2009: 215-223). For a recent and comprehensive account of European creationism, see Blancke, Hjermitsev and Kjærgaard’s *Creationism in Europe* (2014).

²³ According to the historian Elise K. Burton, “Middle-Eastern opposition to evolutionary theory, especially on a statewide policy level, is just as likely to reflect a general resistance to Western influence, especially in states

The popular figure of Harun Yahya might merit a mention. Yahya -pseudonym for Adnan Oktar- has written more than a hundred books and articles blaming Darwinism for communism, fascism and even anti-Turkish racism. Though unsolicited, thousands of copies of his *Atlas of Creation* were sent to all corners of the world, advocating for a paradigm shift from Darwin to creationism. Among other things, Yahya argues that life forms on Earth have never undergone even the slightest change, never developed into one another, but were all created by God as they look today.²⁴ It should not take us by surprise that creationism is presented on a par with the theory of evolution in many Islamic educational environments.²⁵ Beyond Darwinism, the general relation between Islam and mainstream life sciences has been reported to be tense (Hoodbhoy, 2005; Edis, 2007).

In Israel, Darwinism does not fare much better. In 2014, and for the very first time, evolutionary theory was included in the science core curriculum. Until recently, only the biblical account of the origins of humanity was taught in middle schools. Darwinian evolution was optional. However, in a curious compromise, the teaching of evolutionary biology will not be covering human evolution. If students want to find out more about our own species, they should infer it. The political decision to omit our kinship with the great apes was made by the educational authorities for fear of potential criticism from Orthodox religious groups.²⁶

As the religious melting pot that it is, the UK is one of the best places to study different sensitivities to the issue of evolution. In 2013, education authorities found that a state-

affected directly or indirectly by the legacies of recent European colonialism... To better understand manifestations of creationism in Middle Eastern education, historical and sociological information can provide just as much insight, if not more, than religious scriptures and theological texts” (2011: 304).

²⁴ For a detailed assessment of the Turkish case and the nature of Adnan Oktar’s anti-Darwinian efforts, see Riexinger, 2014. Interestingly, Harun Yahya, after a brief flirtation with the ID movement, came to reject its theological indeterminacy. In Yahya’s words, “it is unacceptable for anyone who claims to be a Muslim to constantly avoid saying *Allah created* and instead using terms such as *A power created...* or the *work of intelligent design...* Intelligent Design is another of Satan’s distractions” (2005).

²⁵ Burton (2011) stresses that this is not the case in Iran, but science textbooks in Saudi Arabia dedicate pages to discredit Darwin and evolutionary theory. In turn, Hameed reports that the expressed goal of the national biology curriculum in Pakistan is to “enable students to appreciate that Allah... is the Creator and Sustainer of the universe” (2008: 1638).

²⁶ Nonetheless, the scientific community was not downhearted: they interpret this accommodation as a practical political move. Otherwise, they could not have introduced Darwin into the curriculum at all. See “Darwin enters Israeli schools, but humans left out” (The Times of Israel; June 1, 2014). Apparently, this is not a tailor-made solution for religious Jewish schools alone. A recent article by the US educator Susan Corbett endorses the very same solution. Corbett praises “the British-based examination boards that create the IGCSE Biology papers [because they] are religiously literate and sensitive enough to various beliefs, that questions on the paper regarding evolution tend to focus on animals other than humans” (The Humanist, January 2015).

sponsored orthodox Jewish school in north London was systematically altering and obscuring some questions in official science exam papers. These questions were mainly about evolutionary biology and human reproduction. At first, the government intended to reach an agreement with this and other schools in which the same practices were uncovered. In accordance with the British tradition of accommodation, the national exam board recognized the importance of respecting the school's particularities in terms of religious identity. The Education Minister at the time praised the response as "proportionate and reasonable". But, after giving the matter further thought, the government changed its mind. The exam regulator concluded that exemptions in this area were a "malpractice", and that allowing schools to censor science questions was affecting the students' best interest.²⁷ Regarding other faiths, a recent survey conducted by the University of York found that, when asked whether humans did indeed evolve or were created, pupils attending British secondary schools give substantially different answers. The overwhelming majority of students from secular schools said humans had *developed over millions of years but God had no part in this process*. In schools of Christian denomination, the majority responded that humans had indeed *developed over millions of years from less advanced forms of life and God had some part in this process*. Almost ninety percent of students in Muslim faith-schools asserted that humans were *created by God pretty much in their current form* (Hanley, Bennett, and Ratcliffe, 2013). Similar trends have been reported elsewhere.²⁸ The British media has informed about a rise in creationism not only at the school level but also across university campuses.²⁹ In a more general perspective, reports from the British Council suggest that half of the British population endorses naturalistic evolution, while 22% supports creationism and 17% is inclined to favor ID. Interestingly, 54% of adults believe that ID and creationism should be taught alongside evolution (Allgaier, 2014).

Although we lack systematic research into contemporary creationist trends in other parts of the world, some information exists. Historian and philosopher of science Meera Nanda reports that postmodernist discourses in India have encouraged some Hindu circles to adopt the standpoint of the so-called Vedic Science, which contradict important parts of the

²⁷ See "Exam regulator bans censorship of exam questions at faith schools" (The National Secular Society; March 31, 2014).

²⁸ A study conducted in the Belgian city of Antwerp "demonstrated that almost all young Muslims believed that Allah has created humans, whereas only one in ten Catholic and six in ten Jewish students endorsed creationist beliefs" (Blancke, Flipse and Braeckman, 2014: 78). Science educators in Denmark and Sweden have confirmed this trend (Hjermitslev and Kjærgaard, 2014).

²⁹ See "Academics fight rise of creationism at universities" (The Guardian; February 21, 2006).

Darwinian account.³⁰ As recently articulated by the controversial researcher Michael A. Cremo, the Hare Krishna movement has a full-blown Vedic creationist story³¹. Around the globe -it is something to see in every corner and in every language- Mormons and Jehovah's Witnesses openly preach creationist views. In the far east, South Koreans boast of being "the creationist capital of the world, in density if not in influence" (Numbers, 2009: 222).

Farther, in contemporary Latin America, the steady rise of scriptural Christian Evangelicals has been accompanied by an anti-evolutionist momentum. Most Brazilians think that creationism should be included in the science curriculum. A former Presbyterian governor of the state of Rio de Janeiro publicly defended such a policy, adding that she herself did not believe in the evolution of species.³² A creationist approach is also preferred by the vast educational network that the Seventh-day Adventist Church deploys in South and Central America. Testimonies from former students in Chile confirm that these schools are guided by the hardline creationist teachings of Ellen G. White.³³ Also in Chile, a brief survey into the beliefs of a sample of Congressmen and women showed that almost half of them did not accept the theory of evolution and declared themselves creationists, picturing the Adam and Eve story as a credible explanation (Bellolio, 2014). Finally, creationists in New Zealand have found unsuspected allies among Maori and Pacific Islanders, who think of evolution as antithetical to their autochthonous cosmogony.

These native creation-myths in Oceania are important to remind us that the tensions that Darwinism provokes are not exclusive to traditional monotheism. Ancestral cultures and indigenous communities throughout the Americas possess a completely different set of creation-myths, indeed distinguishable from theism and Darwinism alike.³⁴ Beyond, we can

³⁰ In Nanda's view, "these newer theories boldly defend Vedic mysticism as a legitimate scientific method and hold Vedic-Hindu metaphysical assumptions to be as rational and empirically adequate as the best of modern science, and as deserving of the status of universal objective knowledge as the conventionally accepted theories of matter and biological evolution" (2005: 231).

³¹ In *Human Devolution: A Vedic Alternative to Darwin's Theory* (2003), Cremo claims that human beings have not evolved up from lower animals but rather fallen -*devolved*- from their original unity with the pure consciousness of Brahman. In other words, once upon a time we were uncontaminated spirits, only to be corrupted by matter.

³² See "Rosinha contra Darwin: Governo do Rio de Janeiro institui aulas que questionam a evolução das espécies" (Epoca, May 24, 2004).

³³ According to these views, "the biblical teaching of creation is a crucial belief that has far-reaching consequences for the Seventh-day Adventist church... any reading of Ellen White quickly confirms the fact that she affirms the biblical teaching of creation as it is established in the Old and New Testament on a literal, historical reading of the text" (Hasel, 2006: 229).

³⁴ Perhaps one of the richest bodies of mytho-historical narratives is the Mayan *Popol Vuh*. It relates the foundation of the world, a catastrophic flood, the creation of men from corn and the first interfamilial struggles -much like the Bible.

identify a myriad of religious sects with alien-congenial theories. Raëlian followers believe that life on Earth is a gift bestowed by a scientifically super-advanced extraterrestrial people that created us in their image via DNA insemination.³⁵ Scientologists believe that, around 75 million years ago, the mighty Xenu -dictator of the Galactic Confederacy- brought billions of his people to Earth in a spacecraft, stacked them around volcanoes and then killed them all with hydrogen bombs.³⁶

I have raised all these cases to show that the Creation vs. Evolution debate cannot be constrained to a single context, whether geographical or religious. As the philosopher of science Ian G. Barbour acknowledged, all these creation stories have in common that they “provide patterns for human behavior and archetypes of authentic human life in accord with a universal order” (2000: 50). Thus, communities worldwide demand that the content of compulsory science education should be chosen considering their views on the matter. Suddenly, we have a political problem at hand. As political theorist Amy Gutmann puts it, “the scientific case against creationism is straightforward [but] the democratic case is complex” (1999: 102). Although there is no genuine scientific controversy about the merits of evolution -and the lack of merits of and creationism- these challenges raise genuinely controversial questions about science’s place in modern societies. As the historian of science Thomas Dixon interrogates, “should voters, elected politicians, judges or scientific experts have the final say about what is to be taught in the science classes of publicly funded schools?” (2008, 102). In this context, it should not surprise us that creationists are the ones pushing the democratic argument.³⁷ For all these reasons, I will not be treating the evolution vs. creation controversy as a clash between science and religion, but as a far-reaching political

³⁵ Seizing on ID’s theological minimalism, the Raëlian Movement released a statement supporting the Intelligent Design Movement’s attempts to promote the teaching of this perspective within science classes.

³⁶ Their spirits –known as thetans- would be somehow attached to human beings nowadays. Scientology’s officials make money by selling a recipe to remove them.

³⁷ Describing the situation in the United States, the legal philosopher Stephen Carter asserted that “even if the scientific case for creationism is appallingly shoddy and naïve, nothing follows for constitutional purposes” (1994: 169). Along the same lines, Phillip E. Johnson argues that “the consensus view of the scientific establishment is not enshrined in the Constitution; lawmakers are entitled to act on different assumptions, at least to the extent that the courts will let them” (2010: 24). He goes on to say that “these questions cannot be left to the sole determination of a class of experts, because important questions of religion, philosophy and cultural power are at stake” (Johnson, 2010: 192). The argument is not new. Litigating in the Scopes Trial, William Jennings Bryan wrote that “the taxpayers have a right to say what shall be taught... the hand that writes the paycheck rules the school, and a teacher has no right to teach that which his employers object to” (quoted on Gould, 1999: 157).

question about who is entitled to produce and disseminate trustworthy knowledge. Thus, what is usually regarded as a marginal claim has indeed wide normative implications.

Of course, these questions will be answered differently depending on whether the political system at issue abides by liberal rules. My conclusions might be inapplicable to theocratic regimes, for instance. This work is about how liberal democratic institutions should deal with religiously-inspired factual claims that seem to deviate from the scientific consensus. In an age of rapid technological advances and deep bioethical disputes, these matters are pressing. Evolution is not just an historical science. It is happening now. Medical research struggles to get around the fact that bacteria are developing resistance to antibiotics as an evolutionary adaptation. HIV treatments are a case in point: mutations are a problem for the efficacy of antiviral drugs. In a not too distant future, we will be able to engineer our bodies to trick natural selection. We might be able to steer our own evolution; some scientists think that we already can.³⁸

Enough said for an introductory chapter. While this work deals with religious concepts and approaches, it is not about religion. Our interest focuses on a specific part of the religious discourse, the part that assert truth-propositions and factual claims about the universe we inhabit. While this work deals with science as a grand intellectual project to uncover the operation of the world surround us, it is not about scientific practice itself. This research remains within the confines of what political philosophers usually call ideal theory. This is fundamentally a thesis on political theory. It is first and foremost an inquiry into the internal resources of political liberalism to settle factual controversies in a legitimate fashion. This is to say, in a way that shows respect to all citizens regardless of their diverse comprehensive background. What I have called SCR enter the picture as arguments in these controversies, but the proposed framework might be extensive to other factual disagreements between secular contestants. In turn, science enters the same picture as possible standard to carry such legitimate adjudication in factual controversies. But as my case study converges in the claim that creationism should be taught along Darwinian evolution in the school system, this is also an inquiry about the way in which political liberalism justifies the scope of its educational goals, which I roughly take to be the development of a basic capacity for an autonomous life and the instilment of civic values for a competent citizenship. In this context, we aim to discern whether educational institutions can adjudicate between competing scientific theories

³⁸ For a taste of these futuristic insights, see Juan Enriquez and Steve Gullans's *Evolving Ourselves: How Unnatural Selection is Changing Life on Earth* (2015). See also humanity's future challenges concerning ethics and technology in Yuval Noah Harari's *Homo Deus* (2016).

to fill up the mandatory curriculum without violating the liberal commitment to comprehensive neutrality -which might entail going against some parents' preferences. I shall respond that they can rightfully do it. Although distancing itself from standard liberal responses, this thesis aims to provide a more systematic and philosophically fairer framework to address the kind of claims made by groups that reject contemporary scientific knowledge. Evolution is just but a case in point, but perhaps the most instructive one.

II

Darwinism as a Comprehensive Doctrine

A Response to the Asymmetry Objection

The substantive leg of the CC states that Darwinian evolution stands for a specific picture about the nature of humankind and the overall implausibility of purposeful design in the structure of the universe, thus a naturalistic worldview which is at odds not only with literalist readings of sacred texts, but even with the more general providential, teleological and interventionist approach that most theistic traditions treasure. This way, whilst creationism is excluded and evolutionary theory is compulsory taught, the liberal state seems to be allocating its educational resources to endorse a controversial comprehensive doctrine: by promoting the scientific theory of biological evolution as the true story about how we came to be, liberals are therefore promoting a substantive world picture, which happens to be antitheistic. In other words, science education would be in the job of selling a worldview¹. This is problematic for the political version of liberalism that aims to make political power legitimate to all citizens regardless of their comprehensive doctrines.

As a response, some liberal philosophers have objected that liberal neutrality is by no means violated by excluding creationist theories from the science curriculum because mainstream evolutionary theory is ecumenical enough to be accepted by people from diverse religious backgrounds. Although nobody denies that evolution by natural selection is perceived by many religious sects as disturbing to their most cherished beliefs, this reply points that creationists simply got Darwinism wrong. Accordingly, the argument goes, evolutionary theory should be treated as a strict scientific postulate with no philosophical spill-over. This seems to be the crux of the issue: whether Darwinian evolution can be confined to the realm of value-free factual description -in which case the Asymmetry Objection has the upper hand- or if it exhibits the kind of properties that threaten to subvert other fields of knowledge and philosophical reflection -in which case the substantive CC stands.

This chapter proceeds as follows. Section 1 sketches the Asymmetry Objection. Section 2 explores the Rawlsian notion of a comprehensive doctrine, providing some coordinates and

¹ As Phillip Johnson has put it, Darwinists are moving out “to convert the nation’s schoolchildren to a naturalistic outlook, [so] it may become more and more difficult to conceal the religious implications of their system” (2001a: 75).

examples that are useful to test whether neo-Darwinism qualifies as one. Sections 3 and 4 offer a brief review of the kind of philosophical implications of Darwinism, specifically regarding questions about the meaning of human life and the sources of morality, respectively. Section 5 presents a case for Darwinism as naturalistic doctrine by default. Section 6 analyses the philosophical offshoots of the evolutionary paradigm against the backdrop of other allegedly comprehensive doctrines.

1. The Asymmetry Objection

The Asymmetry Objection states that Darwinism and theism cannot possibly stand on an equal footing as the former is a scientific postulate and the latter a religious worldview. In his last work, the late Ronald Dworkin argues that teaching Darwinism does not amount to atheism in the same way as teaching creationism amounts to theistic indoctrination. This is mainly because, as Dworkin recalls, there are many theistic believers who have embraced mainstream evolutionary theory without trauma.² Hence, Dworkin's objection to the CC rests on an empirical assessment: there are, in fact, countless religious believers who accept evolutionary theory. Starting from a theistic perspective, then, should not tip the scales against adopting mainstream Darwinism as the most accurate story of life on Earth. Neither would it be sensible to argue that biology teachers are "engaged in any campaign to promote atheism" (Dworkin, 2013: 144). This view has received wide support among scientists who are also religious believers (Miller, 1999; Collins, 2007). Thus, beyond the obviously problematic case of *scripturalism*, Darwinism should be able to accommodate a wide range of theological options (Ruse, 2001a).

Conversely, in Dworkin's view, it is too difficult for creationists to hide their intentions of promoting a specifically theistic understanding of cosmic processes and the development of life. Otherwise, the Asymmetry Objection holds, their stubborn insistence against the bulk of the scientific literature makes no sense. Dworkin suggests that we should consider the real political reasons behind the creationist movement in the US, which sees itself as waging a full-range cultural war against the forces of unbelief. Hence, the systematic behavior of several school boards across that country allows the "interpretative conclusion" that they are

² In Dworkin's words, "the scientific and lay communities that have accepted the general theme of Darwinian evolutionary theory include a great number of people who hold to some godly religion... [and] they believe that their belief in evolution is perfectly consistent with a belief in a god" (2013: 143-144).

acting “not primarily for purely academic motives but in the spirit of [a] national campaign... to increase the role of godly religion in public life” (Dworkin, 2013: 143). In other words, creationists are not genuinely interested in spotting the scientific weakness of evolutionary theory for the sake of science’s advancement but rather in pursuit of something quite different: they are promoting a religious conception of the good.³

In the same vein, the philosopher Martha Nussbaum has asserted that, as there is no strong scientific reason for singling out evolution for challenge, “the purpose [to do it] must be a religious purpose” (2008: 322). Likewise, in their constitutional analysis of religious freedom, Christopher Eisgruber and Lawrence Sager affirm that “Creation science and intelligent design seem to be religious doctrines draped in secular disguises; it is hard to imagine that any significant number of people could endorse them except on religious grounds” (2009: 188). Thus, by lacking a truly academic and respectable secular motive, creationist approaches to the history of life should be judged as impermissible religious proselytism. The “worldview perspective” should then be applied to creationism rather than to evolutionism (Reiss, 2011). The Asymmetry Objection concludes that liberal fairness remains undamaged by CC: Darwinism remains religiously neutral in the relevant sense, while creationism not.

For biology teachers, this argument serves strategic purposes to persuade parents and students that the teaching of Darwinian evolution must not be resisted. In tacit support of the Asymmetry Objection, many scientists have spoken up to stress that it is a mistake to think of evolution as a quasi-religious narrative. Stephen Jay Gould recalled that Darwin himself argued that the factuality of nature “could not resolve, or even specify, the existence or the character of God, the ultimate meaning of life, the proper foundations of morality, or any other question within the magisterium of religion” (1999: 192). To convince the opinionated citizens of the United States about the truth of Darwinism without asking them to abandon religion, Jerry Coyne has insisted that “evolution is simply a theory about the process and patterns of life’s diversification, not a grand philosophical scheme about the meaning of life” (2009: 245). Thus, people who “want to find in the story of our origins a reason for our existence, and a sense of how to behave” (Coyne, 2009: 245) is labouring under a delusion.

³ In Dworkin’s words, “...a school board’s decision to mandate the teaching of intelligent design as an alternative to Darwinism reflects not only the assumption that a god capable of creation exists, just as a strict matter of cosmic history, but the endorsement of a full set of ethical attitudes about the role of religion in a well-lived life and an ambition to inculcate those ethical attitudes in new generations” (2013: 142).

If the Asymmetry Objection is right -if Darwinism does not resemble a comprehensive doctrine in the Rawlsian sense as theistic perspectives do- then its exclusive teaching is legitimate under the rules of political liberalism. Consequently, the substantive part of CC should be thoroughly dismissed. However, if evolutionary theory carries within its scientific postulates the kind of ideological implications that are basic for the articulation of a grand belief system able to answer ultimate questions about life, then the Asymmetry Objection should be rejected and the substantive CC stands. But what do we mean by a comprehensive doctrine in the Rawlsian sense? To this question we turn in the next section.

2. What does it take to be a Comprehensive Doctrine?

Rawls did not provide a systematic account of what it takes to be regarded as a comprehensive doctrine. Thus, for the purposes of this research, we must spell out what we mean by that. Rawls did provide, however, a few guiding criteria and a set of scattered examples. A first important clue is found in the introduction to his *Political Liberalism*. Here, Rawls sketches three big questions that humankind has been eager to tackle for centuries: (i) a question about the nature of knowledge and its accessibility; (ii) a question about the foundations of the moral order; and (iii) whether our duties and obligations are driven by external or internal motives. The underlying suggestion is that comprehensive doctrines are forged in the attempt to answer these fundamental questions. Theology tried to do it first, as Rawls recalls: there was a time in which all the responses pointed to God. Later, they received secular treatment in the writings of David Hume and Immanuel Kant. Although not religious in the traditional sense, Rawls sees these philosophical contributions as *comprehensively* liberal -as opposed to *politically* liberal. Unlike comprehensive doctrines -whether religious or nonreligious, liberal or illiberal- Rawlsian political liberalism is not supposed to take a stand about these ultimate questions.

The distinction between political liberalism and a variety of comprehensive liberalisms is contested but theoretically crucial. Kantianism and Utilitarianism are Rawls's preferred examples of liberal comprehensive views: whereas Kant's moral philosophy enthrones the ideal of autonomy as a supreme value for all personal and societal life, the doctrine devised by Bentham and Sidgwick does likewise with the principle of utility. The type of liberalism associated with J. S. Mill would also be comprehensive insofar as it makes individual

originality the fundamental value for a life well lived. Instead, the political conception does not need such a stringent philosophical commitment. Only comprehensive doctrines have a much wider scope. In Rawls's words, a doctrine is comprehensive

“...when it includes conceptions of what is of value in human life, and ideals of personal character, as well as ideals of friendship and of familial and associational relationships, and much else that is to inform our conduct, and in the limit of our life as a whole. A conception is fully comprehensive if it covers all recognized values and virtues within one rather precisely articulated system; whereas a conception is only partially comprehensive when it comprises a number of, but by no means all, non-political values and virtues and is rather loosely articulated. Many religious and philosophical doctrines aspire to be both general and comprehensive”
(2005: 13)

Comprehensive doctrines would thus be relatively articulated worldviews that draw upon ultimate religious or philosophical convictions, as well as from metaphysical assumptions, moral outlooks and even epistemological intuitions, as Rawls sometimes indicates. They are integrated, intelligible and basically coherent belief systems that speak about our place in the universe, reveal our perception of reality, delve into the meaning and purpose of life, explain what we should value, and establish our ethical duties to others. In a phrase, they are the existential framework through which we understand the world. Rawls assumes that all of us have a comprehensive view extending well beyond the domain of the strictly political, though in many cases this view may be fragmentary and incomplete.

None of these doctrines, however, is alone suitable to ground the basic political agreement. If they are reasonable enough, from these we can work out an overlapping consensus. To exemplify how this consensus might be arranged, Rawls presents the case of a hypothetical society in which four distinctive comprehensive views coexist: first, the (reasonable) religious view; then, Kant's moral philosophy; next, predictably, Utilitarianism. Finally, Rawls includes what he calls a “comprehensive pluralist view” (2005: 170), which is akin to the sort of value-pluralism which asserts that there are several moral values which might be equally correct, and yet in conflict with each other.

The above list is not exhaustive. Rawls expressly recognizes that there are many other possible comprehensive views. It is possible to trace a few more examples throughout his

work. Explaining why governments cannot act to advance Catholicism or Protestantism, or any other religion, Rawls also discards that governments should “maximize the fulfilment of citizens’ rational preferences, or wants (as in utilitarianism) or to advance human excellence, or the values of perfection (as in perfectionism)” (2005: 179). In this sense, *perfectionism* is treated as a controversial view about the meaning, value and purpose of human life. As such, it corresponds to a comprehensive philosophical doctrine of the kind that is not affirmed by citizens generally; then, its pursuit through basic institutions would give political society a sectarian character⁴.

In an earlier work, Rawls explains that “Idealism and Marxism in their various forms are also general and comprehensive” (1987: 4) so they cannot ground—at least not alone—the political conception of justice. Both are taken to be prototypical non-religious and non-liberal worldviews. For Rawls, Hegel’s Idealism and Marxist ideology stood in the same symmetrical position as the comprehensive liberalism of Kant or Mill in the face of religious doctrines (1987: 6). Regarding substantive republican views, Rawls distinguishes between what he calls classical republicanism and the type of civic humanism fairly depicted in the nostalgic writings of Hannah Arendt: while the former does not presuppose a comprehensive religious, philosophical, or moral doctrine, the latter raises a fundamental objection to be adopted as the basis for a political conception, to the extent that it assumes that the human essence can only be fulfilled through participation in political affairs.⁵

Rawls makes further use of Utilitarianism to compare it with Libertarianism, with the Nozickian version in mind. Rawls refers to both as the kind of “completely general theory... that rejects the idea that special first principles are required for the basic structure” (Rawls, 2005: 262). Nonetheless, he does not literally label the Libertarian theory as comprehensive.⁶ To be fully consistent with his notion of a purely political liberalism, Rawls puts his own

⁴ Although it is not entirely clear what the content of the perfectionist worldview is, Rawls brings up the doctrines of Plato and Aristotle to describe what a “perfectionist state” might look like (2005: 195). Elsewhere, Rawls argues that both perfectionism and utilitarianism are clear examples of general and comprehensive views, “since the principles of perfection and utility are thought to apply to all kinds of subjects ranging from the conduct of individuals and personal relations to the organization of society as a whole, and even to the law of nations” (Rawls, 1987: 3).

⁵ Rawls asserts that this view, “as a form of Aristotelianism, it is sometimes stated as the view that man is a social, even a political, animal whose essential nature is most fully realized in a democratic society in which there is widespread and vigorous participation in political life...taking part in democratic politics is seen as the privileged locus of the good life... From the standpoint of political liberalism, the objection to this comprehensive doctrine is the same as to all other doctrines” (2005: 206).

⁶ Perhaps Libertarianism should not be included in this list. After all, just lacking *special first principles* to ground the basic structure does not seem the kind of reason that determines the comprehensiveness of a doctrine.

ground-breaking theory of justice in the spotlight: Justice as Fairness, at least as it is presented in *A Theory of Justice*, deserves to be regarded as “a comprehensive liberal doctrine (although the term comprehensive doctrine is not used in the book) in which all the members of its well-ordered society affirm the same doctrine” (Rawls, 2005: 489). Therefore, in the pluralistic society that Rawls envisions in his later work, the good-old Justice as Fairness also represents just one philosophical point of view to be negotiated and eventually overlapped with other comprehensive outlooks. Finally, Rawls describes secular reason “as reasoning in terms of comprehensive non-religious doctrines” (2005: 452), thus different from the reason that characterizes the political conception. Although he does not specify their content, he assumes that these secular doctrines “are on the level with religion and first philosophy” (Rawls, 2005: 452). Here, Rawls is most probably thinking about the kind of “Enlightenment Liberalism which historically attacked orthodox Christianity” (2005: 486).

To sum up, even considering that Rawls does not articulate a precise account of what it takes to be considered a comprehensive doctrine but indeed a “deliberately loose” one (2005: 59), we do have some framing coordinates and a set of workable examples. In a nutshell, comprehensive doctrines aim to provide a coherent vital perspective to handle pressing questions about value, meaning, knowledge, morals, social organization and ultimate reality. These are different levels of existential reflection, but they are connected. They go by different names: worldviews, ideologies, first philosophies, all-encompassing doctrines and conceptions of good. They do not mean the same but they all express a similar idea⁷. They usually involve metaphysical positions, cosmic myths, meta-ethical intuitions, axiological commitments, epistemological theories, normative commandments, historical interpretations, political programs and sacred truths in a joined web with some philosophical or religious coherence. It is not necessary for these doctrines to deliver a full response in

⁷ Rawls, as well as most liberal political theorists, refer to *comprehensive doctrines* and *conceptions of the good* rather interchangeably. The political philosopher George Sher has noticed that these two notions are not quite the same though “they are recognizable close relatives” (1997: 84). In fact, sometimes it is just too difficult to distinguish them. In Jonathan Quong’s recent reinterpretation of political liberalism, “conceptions of the good, especially towards the more comprehensive end of the spectrum, often include claims of a religious nature, as well as theories of epistemology, metaethical theories, theories about the ontology of value, theories of personal identity, or other metaphysical claims about the nature of persons and the universe” (2011: 13). As shorthand for all these sort of claims, Quong uses the general notion of *metaphysical beliefs*. The English moral philosopher Mary Midgley relies on a similar formulation: “The word metaphysics [covers] such central topics as the relation of mind and matter, free will and necessity, meaning, truth and the possibility of knowledge, all in an attempt to make sense of the world as a whole” (2002: 119). To my mind, the notion of comprehensive doctrine is more capacious: while a conception of the good is about ways of living, a comprehensive doctrine would include both lifestyles and truth claims that are not reflected in normative value judgements. As in this work we are dealing with truth-claims about factual reality, I will be using the notion of comprehensive doctrine.

each of these fields to be comprehensive. Most of them are just fragmentary constructions. Arguably, theistic doctrines aspire to be fully comprehensive. But the rest of the examples offered by Rawls are partial in their scope. The question that lies ahead is whether Darwinism should be considered as one of these doctrines, either fully or partially comprehensive.

3. **Philosophical Implications.**

Darwin's insights on organic evolution, expanded by the contribution of a century and a half of scientific findings, stir our minds in different directions. In this section, I will outline some of the most pressing philosophical issues surrounding Darwinian evolution, especially those issues that might affect our self-perception as human beings. In brief:

- a) Natural selection reveals that species were not intended nor willed but rather accidental, thus the problem of *finalitas*;
- b) Humans are not fundamentally different from other non-human animals, thus the problem of *essentia*;
- c) The amount of waste and suffering in the world is best understood from an evolutionary perspective, thus the problem of *malum*;
- d) Free will is an operational illusion generated by our material brains, thus the problem of *voluntas*;
- e) Knowledge should be understood in terms of its capacity to advance reproductive fitness, thus the problem of *cognitio*.

These five philosophical problems are not exhaustive but they suffice to configure a distinctive world-picture with a specific view of humankind's role. I shall argue that they are best understood as starting points for a comprehensive doctrine in the Rawlsian sense.

Before Darwin, it was commonly assumed that some superintelligence had designed, intended and produced all life forms on Earth. I am not referring to the literalist creed which maintains that God created everything as told by the book of Genesis, but rather to the much more plausible belief that He acted as an overarching guide. Darwinism not only destroyed the former but severely undermined the latter: it was natural selection, and not an invisible

celestial hand, which was getting the job done⁸. The defining feature of natural selection is that it works as an undirected, purposeless, and unconscious process. In Richard Dawkins' formula -turning William Paley's argument backwards-, natural selection operates as a 'blind watchmaker'.⁹ Although Darwin never inferred from this the inexistence of the Christian God, he was fully aware that mechanistic natural selection and the providential worldview were incompatible with one another.¹⁰ The Darwinian dictum for theism is a demanding one: if we are to keep the faith, the role of a godly designer should be importantly rethought. Providentialist accounts will not work.¹¹

As noted by many during his own time, Darwin's natural selection was delivering a death-blow to teleology. No purpose in mind means that none species –not even *Homo Sapiens*– was *willed* and *necessary* to fulfil any plan. George Gaylord Simpson, one of the most influential palaeontologists of the twentieth century and a major participant in the modern evolutionary synthesis, issued the central Darwinian principle: “Man is the result of a purposeless and natural process that did not have him in mind” (1967: 345). The naked evolutionary truth is that we are a rather accidental species, with an incredible amount of luck to be here. Taking Darwin seriously means to reconsider what we ancestrally thought of ourselves, now in a fundamentally indifferent cosmos. Technically speaking, evolutionary theory replaces teleology with *teleonomy*: purposefulness, in the words of the theoretical chemist Peter Schuster, “is only apparent and is not a prerequisite or a driving force of the evolutionary process, but rather its result” (2008: 32).

⁸ In his assessment of the place of God in public schools, the legal philosopher Kent Greenawalt argues that “we must understand that whenever scientific conclusions have a strong probability of being true overall, this can affect not only the likely truth of narrow religious doctrines that are directly opposed to the scientific conclusions, but also the persuasiveness of other, more basic, religious conceptions” (2005: 98-99). Here, Greenawalt seems to be aware that it is not only Biblical creationism that suffers the truth of the Darwinian paradigm, but also the more extended theistic idea of a hands-on deity.

⁹ While a “a true watchmaker has foresight... [Natural selection] does not plan for the future. It has no vision, no foresight, no sight at all. If it can be said to play the role of watchmaker in nature, it is the *blind* watchmaker” (Dawkins, 1986: 5).

¹⁰ As he wrote in a letter to his mentor Charles Lyell, “the view that each variation has been providentially arranged seems to me to make natural selection entirely superfluous” (1861). Conversely, the inherent logic of natural selection was suggesting that divine intervention was superfluous. Later in his *Variations of Animals and Plants Under Domestication* (1868), Darwin stated that “no shadow of reason can be assigned for the belief that variations, alike in nature and the result of the same general laws, which have been the groundwork through natural selection of the formation of the most perfectly adapted animals in the world, man included, were intentionally and specially guided”.

¹¹ As the British philosopher of science Phillip Kitcher summarizes, “a history of life dominated by natural selection is extremely hard to understand in providentialist terms” (2007: 124).

This is basically the problem with TE, the account favoured by the Vatican and other moderated theologians: any account that intends to retain classic teleology is not Darwinian in this sense.¹² For the theistic believer, teleology suggests necessity: if Homo Sapiens were *willed* by God –as has been emphasized by Pope Benedict XVI and recently highlighted by Pope Francis- sooner or later we *had to appear* to inhabit the planet.¹³ Darwinism contradicts the doctrine of necessity and instead declares that natural selection produced us in a fully contingent manner. In this sense, S.J. Gould has suggested that if we *rewind the tape* of life to a certain point in ancient times and then let the tape run again, all the odds indicate that organisms would not navigate the same evolutionary route. The results could be strikingly different. Human intelligence, or even mammalian forms, might not have appeared. If this is correct –as most scientists think it is- then “life may not, in any genuine sense, exist for us or because of us... perhaps we are just an afterthought, a kind of cosmic accident” (Gould, 1989: 44). Accordingly, the neo-Darwinian is warranted to believe that the world was not waiting for us in any meaningful sense.¹⁴ This is the evolutionary conclusion about the problem of *finalitas*. I join Michael Ruse in concluding that “the fact that we are the contingent end-products of a natural process of evolution, rather than the special creation of a good God, in His own image, has to be just about the most profound thing we humans have discovered about ourselves” (1998: xi). It is indeed hard to understate its meaning.¹⁵

¹² As the evolutionary psychologist Steve Stewart-Williams asserts, “Theistic Evolution does provide a solution to the God v. Darwinian evolution dilemma. But the solution is not to reconcile these views; it is to reject Darwinian evolution” (2010: 66). This has been recognized by the Catholic philosopher of religion, Logan Paul Gage: “Teleological evolutionists should simply be clear that their hybrid theory is not Darwinism, traditionally understood” (2013: 136).

¹³ While Pope Benedict XVI declared that “we are not some casual and meaningless product of evolution. Each of us is the result of a thought of God. Each of us is *willed*, each of us is loved, each of us is necessary” (cited in Horn & Wiedenhofer, 2008: 7), Pope Francis recently stated that “each of the various creatures, willed in its own being, reflects in its own way a ray of God’s infinite wisdom and goodness” (2015: 51).

¹⁴ As the French biochemist Jacques Monod once vividly expressed, “the universe was not pregnant with life nor the biosphere with man. Our number came up in the Monte Carlo game. Is it surprising that, like the person who has just made a million at the casino, we should feel strange and a little unreal?” (1974: 158). The Turkish-American physicist Taner Edis articulates the same idea: “Our world is full of random uncaused noise. Through Darwinian processes, this noise gives rise to creative novelty, including very likely the creativity of our brains. Yet our religions insist that we are fearfully and wonderfully made, that creativity demands something beyond the material world. It is hard to imagine how much more thoroughly this vision can be undermined” (2002: 74). Finally, as the Israeli historian Yuval Noah Harari has put it, “we are not actors in any larger-than-life drama. Life has no script, no playwright, no director, no producer -and no meaning. To the best of our scientific understanding, the universe is a blind and purposeless process, full of sound and fury but signifying nothing. During our infinitesimally brief stay on our tiny speck of planet, we fret and strut this way and that, and then are heard of no more” (2016: 200).

¹⁵ As many have observed, there is a fundamental agreement between both theistic thinkers and nontheistic voices regarding what is at stake. In the words of Mary Midgley, “the theory of evolution is not just a piece of theoretical science. It is, and cannot help being, also a powerful folk-tale about human origins... Suggestions

Then we have the problem of *essentia*. Another fundamental assertion of evolutionary biology is that life is a continuum. Accordingly, the separateness of species might be a useful taxonomical exercise but it will never reveal essentially distinctive categories. Hence, Darwin presented an alternative understanding to that of Plato, Aristotle and most of the classic philosophers. The latter believed that species had a stable ontological identity. Darwinism is at odds with this type of essentialism. If anything, it should be considered rather nominalist: we put tags on different organic forms mostly for pragmatic reasons. But there is no ultimate difference between a band of chimpanzees and my human neighbours, as genetics confirms. At least, there is no difference at the essential level.¹⁶ Again, this bears the power to strip human beings of their allegedly superior position in creation. As G.K. Chesterton once warned, evolutionary theory works as a *self-inflicted assault* on the part of humanity. In fact, the whole notion of human nature could be called into question: we are primates with language –thus culture- that rule the Earth through technology. Darwinism commands us to embrace our place -which happens to be just a random twig- in the genealogical tree.

Unsurprisingly, this might affect our after-death expectations too: for monotheistic traditions, animals are not supposed to have transcendental souls. Accordingly, for Darwinism, there is no reason to believe that we do.¹⁷ If our beliefs about what happens after natural death are relevant to the articulation of our worldviews -insofar as these expectations might work as psychological drivers- then Darwinism matters. Furthermore, the evolutionary approach to the problem of *essentia* should lead us to reconsider the moral status of non-

about how we were made and where we come from are bound to engage our imagination, to shape our views of what we now are, and so to affect our lives” (2002: 1). The Catholic cardinal Christoph Schönborn has argued that “the question of whether the universe and our planet Earth and we human beings owe our emergence to ‘blind fate’ or to ‘an extremely wise and good plan’ affects many people, because it involves questions that every human being asks himself sooner or later: ‘Where do we come from?’ Where are we going? What is the meaning of life?’” (2007: 86). They seem to be aligned with the atheist author Christopher Hitchens, who wrote that “one cannot avoid taking a position. Either one attributes one’s presence here to the laws of biology and physics, or one attributes it to a divine design” (2007: 35-35).

¹⁶ This might sound too rough. After all, species are generally considered as groups of interbreeding populations which are reproductively isolated from other groups. Accordingly, a species is a reproductive community. But that speciation process is usually due to prior geographic -and therefore contingent- isolation. It does not respond to ontological differentiated categories. Once such process is reversed, a common gene pool might well arise between two previously separate species. See Coyne, 2009, Ch. 7.

¹⁷ The influential historian of science William B. Provine famously said that modern evolutionary biology was telling him “loud and clear... that there is no life after death. When I die, I am absolutely certain that I am going to be dead. That’s the end for me” (1994).

human animals. Philosophers advocating animal rights have been arguing this on a fundamentally Darwinian base.¹⁸

Then we have the problem of evil, or what theologians call *theodicy*. The theistic repertoire to account for the incredible amount of suffering and waste in nature is varied, but usually surrenders to an inscrutable divine plan. Darwinism suggests otherwise: that the world is bound to be scourged by pain to open new paths for the development of life. Death is just another component in the circle of life. Tennyson's poetically tragic notion of *nature red in tooth and claw* has thus no transcendental point. As most evolutionary theorists note, the heartrending plot of life on Earth looks exactly as it would look if no one had willed it.¹⁹ The same goes for the obvious imperfections of our anatomies, which can be reasonably explained by non-directed cumulative adaptations. Here, the power of Darwinism lies in its capacity to provide a full narrative that *prima facie* makes more sense than any theological attempt.²⁰ While it is not a knock-down argument against the cogency of theism, it does put some constraints on it. The Darwinian reading of the unnecessary suffering in the world invites theistic traditions to acknowledge that it might not be logically possible to have a god who is omniscient, omnipotent and omnibenevolent at the same time. Some of those qualities must go.²¹

The next distressing puzzle is the problem of *voluntas*. If the evolutionary process is entirely mechanistic and blindly guided by natural selection, Darwinians and their critics speculate about the “unavoidable implication... that human beings have no free will” (Menuge, 2013: 93). As Harari has recently put it, “the contradiction between free will and contemporary science is the elephant in the laboratory, whom many prefer not to see as they peer into their microscopes and fMRI scanners” (2016: 282). For it seems that the notion of free will cannot escape the Darwinian tendency towards reductive physicalism: it can ultimately be explained

¹⁸ Prominently, the Australian ethicist Peter Singer has urged us to “recognize that the way in which we exploit nonhuman animals is a legacy of a pre-Darwinian past that exaggerated the gulf between humans and other animals, and therefore work towards a higher moral status for nonhuman animals, and a less anthropocentric view of our dominance over nature” (1999: 61-62).

¹⁹ In Dawkins terms, “the universe we observe has precisely the properties we should expect if there is, in the end, no design, no purpose, no evil and no good, nothing but blind, pitiless indifference” (1995: 133).

²⁰ As George Levine puts it, “natural selection helps explain, as religion never satisfactorily could, the suffering in the world that so disturbed Darwin” (2006: 40). Darwin was indeed particularly puzzled by the theological suggestion that systematic suffering was somehow contributing to moral improvement.

²¹ In the language of science, the late particle physicist Victor Stenger has argued that “the empirical fact of unnecessary suffering in the world is inconsistent with a god who is omniscient, omnipotent and omnibenevolent. Observation of human and animal suffering look just as they can be expected to look if there is no God” (2007: 224).

away by appealing to physics and biology or, if you prefer, to anatomy and the body's physiology.²² Indeed, Darwinians are prone to think that the conscious self is probably an epiphenomenal illusion created by the material brain. Thus, voluntary actions are never fully voluntary under this materialist framework: our choices are only apparent insofar as they are predisposed by our neural wiring, which in turn is arranged by our genetic inheritance and a quota of pure randomness. However, this does not mean that free will should be discarded as a useless notion. Indeed, the actual feeling of having free will could be an evolutionary by-product that developed alongside our conscience, which in turn owes its appearance to the increased complexity of our frontal lobes. We still need it, as E.O. Wilson recalls, "if not in ultimate reality then at least in the operational sense necessary for sanity and thereby for the perpetuation of the human species" (2014: 170). Therefore, from a Darwinian perspective, free will is basically a cheaper-to-keep illusion. As it were, if comprehensive doctrines are supposed to take a stand on whether we are truly autonomous agents or rather vehicles for the mechanical rule of our genes, then the question of *voluntas* cannot be ignored.

Finally, there is the problem of *cognitio*. As mentioned, Rawls thought that questions about the nature of knowledge and its accessibility were relevant to articulate comprehensive doctrines. Darwinism provides an epistemological understanding too. In a nutshell, it maintains that organisms gather information about the external world to increase their evolutionary chances. Our ancestors learned that their cognitive functions were trustworthy when knowledge proved to be an invaluable adaptive tool.²³ Therefore, knowledge has not fallen from heaven nor is it a pale reflection of an ideal platonic form. Critics point out that if the Darwinian theory of knowledge is correct, it is very unlikely that our cognitive faculties are reliable: after all, they are not in the business of identifying truth over falsity but aimed at pure survival and reproductive fitness. A false belief could be as adaptive as a true one. Accordingly, even the ground-breaking discoveries from evolutionary biology should be called into question.²⁴ Besides its own circularity problems, Darwinists are not deterred by this criticism. What is *ultimately* true is beyond the scope of their theory of knowledge.

²² In one of his last writings before he died, Christopher Hitchens acidly indicated that it was "no fun to appreciate the truth of the materialistic proposition that I don't *have* a body, I *am* a body" (2012: 41).

²³ Some of that vestigial knowledge is still present: like any other primate, we associate snakes and heights with danger since childhood. On the contrary, we have not yet developed any atavistic fear to electric sockets, for instance, even though they constitute a much more present risk in our daily existence -at least more than snakes.

²⁴ Alvin Plantinga is the most prominent figure insisting that evolutionary naturalism is self-defeating. Plantinga states that "a naturalist who accepts current evolutionary theory has a defeater for the proposition that her cognitive faculties are reliable. Furthermore, if she has a defeater for the proposition that her cognitive faculties are reliable, she has a defeater for any belief she takes to be produced by her faculties... including her belief in naturalism and evolution" (2011: xvi).

Darwinists are just asserting our sufficient epistemological powers to match the ontology of the world. To this account, truth is a practical concept²⁵. What matters is that we can make rational sense of our experiences, can communicate them, and finally can act upon the reliability of such accumulated knowledge. Of course, our perceptions can be misled and our senses are sometimes deceived, but in the long term we usually get it right. Otherwise, the Darwinian believes, we would be extinct by now.

In sum, without departing from its scientific foundations, Darwinism contains enough clues to reflect on fundamental philosophical issues. The responses given to these problems - *finalitas, essentia, malum, voluntas* and *cognitio*- configure an original picture of the world, specifically about the nature and place of human beings in the cosmic drama. Darwinism holds that we are basically an improbable biological accident, closely related to other life forms, with a rather limited amount of real freedom, a species that dwells on the planet collecting data for survival and reproduction. This is not to say that our values should be directly determined by the intellectual acceptance of human contingency or by the recognition that we are just evolved apes. But such coordinates do provide a basic non-theistic frame within which we develop notions of existential meaning.

4. Metaethical Darwinism.

It might be argued that the previous section does raise important metaphysical considerations but that a model case for a comprehensive doctrine should include a normative side, a basic set of moral commandments about how we *ought* to live, or at least a clear framework to make value-judgments. One way to tear down the Asymmetry Objection is to show that a philosophical reading of evolution is *as* normative as any traditional religion or any comprehensive liberalism, such as Utilitarianism and Kantianism.²⁶

²⁵ As Ruse distinguishes, there is a world that we can in some sense discover –the level of “common sense reality”- and there is the world in some absolute sense –the level of “metaphysical reality” (1998: 296). The former suffices for the Darwinian.

²⁶ Philip E. Johnson has defended this idea in the following terms: “The continual efforts to base a religion or ethical system upon evolution are not an aberration, and practically all the most prominent Darwinist writers have tried their hand at it. Darwinist evolution is an imaginative story about who we are and where we came from, which is to say it is a creation myth. As such it is an obvious starting point for speculation about how we ought to live and what we ought to value” (2010: 163).

Most scientists would be bewildered at the mention that a scientific account can provide a normative outlook. Scientific accounts are supposed to describe how the natural world works and not how we should behave on the grounds of such discoveries. Thus, Hume's Law: we do not derive *ought* from *is*. Facts and values do not mingle. Consequently, even if the grand evolutionary story is factually correct, it would be just wrong to build a normative argument on its shoulders. We do not want to commit what the British philosopher G. E. Moore once called the "naturalistic fallacy". We do not speak about the moral virtues or moral vices of nature.

Even though Darwinism is not in the business of telling people how they should conduct their lives, my own claim is that it does provide a speculative base to reflect on why we have the moral sentiments we happen to have. In other words, acknowledging that evolutionary theory does not trade on mandatory prescriptions does not preclude that it can help us to understand our sense of moral obligation.

We are familiar with a few historical attempts to draw a substantive ethical account from a Darwinian perspective. The Social Darwinism associated with the name of Herbert Spencer used to view evolutionary logic as an encoded pattern that *had* to be discovered, endorsed and ultimately imitated by humans. Thereby, Social Darwinists extended the notion of the *survival of the fittest* to our political, economic and social relations as a normative category.²⁷ Fierce competition was expected, with a few winners and a lot of losers. The winners represent the height of Darwinian adaptation, whereas the losers represent the unavoidable costs of the struggle for existence. Those who are left behind have thus no right to claim much compensation from society. Their failure enables progress. No wonder then that Social Darwinism was associated with unbridled capitalism.²⁸ The same narrative fed the desire of a relevant portion of the scientific community in the first half of the twentieth century to explore eugenics: it was supposed to be *right* to lend a helping hand to natural selection to improve the fitness of our species.

These views have no serious support nowadays, so it would not be accurate -nor intellectually honest- to think about philosophical Darwinism as Social Darwinism in the above sense.

²⁷ The *survival of the fittest* expression was not originally Darwin's, but coined by Spencer himself in his *Principles of Biology* (1864). Alfred Russel Wallace advised Darwin to introduce it in later editions of *On the Origin of Species*, which Darwin did.

²⁸ Midgley identifies Social Darwinism with a specific Victorian political agenda. In the same way that people used the Newtonian picture to "protect monarchical government", Midgley argues that a century later the Spencerian picture was devised to "protects competitive individualism" (2002: 160).

From Thomas Henry Huxley to Richard Dawkins, there are many examples of fully-fledged Darwinists who do not want to live in a society strictly ruled by evolutionary imitation.²⁹ The kind of expansive Darwinism that interests us here is related with the project referred to as sociobiology and, later, evolutionary psychology. The aim of that project has been to devise a scientific account that can explain the basis for social behaviour from a purely evolutionary perspective.³⁰ One of its primary concerns has been to develop a biologically grounded response to the mystery of altruism in the animal kingdom. It roughly states that we show a prevalent interest in benefiting our direct relatives because of our shared genetic heritage. In other words, we tend to favour our kin because we are interested in advancing our genes through future generations. This picture has led some biologists to describe human beings as mere gene-replicator machines (Dawkins, 1976). Not all Darwinians exhibit the same loyalty to the gene-centric view, but mostly all accept that the basic features of our social and familial life -including sexual attitudes, gender roles and parental care- can be fundamentally interpreted along evolutionary parameters. Sociobiologists suggest that our nature cannot be washed away by cultural change. We are not a blank page to be written on (Pinker, 2002). This explains why some utopian proposals -such as abolishing the nuclear family- were never destined to prevail. Notice that Darwinism is not specifying any political arrangement to raise offspring; rather, it is asserting that our natural dispositions -shaped by evolution across millions of years- cannot be easily overridden by normative goals.

But a world dominated by values extrapolated from pure kin selection is insufferable. Societies do not thrive in a state of nepotistic warfare. The sociobiological discourse explains why individuals move from the kind of hard-core altruism that we practice within our family ties to the kind of soft-core altruism that we exercise towards people outside it. Accordingly, the golden rule that most religious denominations treasure as their original contribution – *treat others as you would like to be treated*- is ultimately a maxim of reciprocity inscribed in our evolutionary heritage. In other words, the Darwinian perspective provides an account on why being just is a good idea. There is no true altruism in the sense of absolute selfless

²⁹ Huxley -known as *Darwin's Bulldog*- thought that animal methods in the struggle for existence were not adequate moral guidelines for human societies. Our ethical progress depends, Huxley believed, not in the imitation of natural processes but in fighting against such logic. Dawkins -sometimes named as *Darwin's Rottweiler*- has explained that he is “a passionate anti-Darwinian when it comes to politics and how we should conduct our human affairs” (2003: 10-11). Here, Dawkins is referring to our moral obligations to take care of the sick, the weak, and the oppressed, all actions that seems to go against the iron law of natural selection. Darwin himself noted this apparent contradiction in *The Descent of Man* (1871).

³⁰ It is generally considered that this path of research was inaugurated by W. D. Hamilton's seminal paper *The Genetical Evolution of Social Behaviour* (1964), though the tag that works as a disciplinary umbrella for this project was introduced by E. O. Wilson in his *Sociobiology: The New Synthesis* (1975).

behaviour but a form of indirect selfishness: we benefit other individuals waiting to be benefited in turn.³¹ This is a pattern of behaviour that we witness throughout the whole animal world. It would also explain why we feel morally entitled to punish, isolate or even put free-riders forcibly back into line.³² Moreover, the kind of behaviour that comes at a cost to the individual without visible reciprocation –e.g. sacrificial cooperation- would have found its evolutionary explanation too, as a long-term investment that impact on the group’s reproductive fitness, as we can observe in the world of social insects.³³

As we intuitively associate moral virtues with altruism, generosity and selflessness, and moral vices with the sort of egoistic behaviour that disregards the welfare of others, the sociobiological conclusion seems rather inescapable: morality, in a nutshell, is an evolutionary adaptation, “just like hands and feet” (Ruse, 1998: 222). Over millions of years, long before the dawn of culture, our behavioural dispositions were slowly carved out by natural selection. Those traits that enhanced our reproductive fitness were passed on to our descendants, traits that might have included cooperative dispositions. The detrimental ones, such as incest and license-to-kill, were fought through taboos and prohibitions. Sociobiology-minded Darwinians are prone to detect the invisible hand of evolution in a myriad of animal and human predispositions, habits and attitudes.³⁴ This is not the same as to affirm that nature’s process should serve us as moral injunctions. What Darwinian sociobiology is asserting is that many of our present values can be understood through an evolutionary lens and that our moral codes are genetically underpinned. The scientific theory of evolution remains

³¹ In the candid formula offered by the British science writer Matt Ridley, “Tell your children to be good, not because it is costly and superior, but because in the long run it pays” (1996: 141). The biologist Michael Ghiselin put it more grimly: “Scratch an altruist and watch a hypocrite bleed” (1974: 247). In a less bleak formulation, there is the well-known maxim *I will scratch your back if you will scratch mine*.

³² Free-riders are also known as “defectors”, as in Robert Axelrod’s seminal *The Evolution of Cooperation* (1984). In Axelrod’s conclusions, our moral sense of reciprocity evolves as an indefinitely repeated Prisoner’s Dilemma. If we play just once, the best individual strategy will be defection. But if we learn to anticipate our counterpart’s cooperation, we will cooperate in return because that is the best strategy for both. This is the well-known *Tit-for-Tat* model of cooperation. Ridley has referred to this model of Game Theory as “an esoteric branch of mathematics that provides a strange bridge between biology and economics” (1996: 53).

³³ After decades of intellectual dishonor, the idea of group selection as an evolutionary mechanism –instead of natural selection operating only at the level of the individual- is back on track. This theory suggests that single organisms in animal societies have good reasons to offer up their wellbeing in the name of the group when fighting predators or competing against rival groups of the same species, like the bird that warns of danger to its flock and put itself at risk. In all these cases, the individual will not enhance his own reproductive fitness, but this type of heroic behavior will enhance the chances of the group to overcome its adversaries. Some of these ideas were early sketched out by Darwin in *The Descent of Man* (1861). For a recent defense of the theory of group selection, see E. O. Wilson’s *The Social Conquest of Earth* (2013).

³⁴ Others, such as S.J. Gould, retort that these are simply “just so” stories, never fully tested. Anti-Darwinian intellectuals take a harder line; Mary Migley has argued that “there is something endemically depraved and sinister about all discussion of human life which uses a biological point of view” (2002: 152).

descriptive and not prescriptive. However, biological history provides the foundations on which culture builds. It is a building that rises well above and beyond those biological foundations, but it has its roots firmly in them.³⁵

My tentative claim is that evolutionary theory does not offer a distinguishably coherent set of substantive ethics –a theory about what we *ought* to do to live a good life- but it does provide us with a metaethical map to the foundations of our moral sense. It remains an open question to what extent the evolutionary moral presuppositions operate as constraints over the realm of applied ethics, either encouraging or discouraging certain prescriptions. By itself, scientific Darwinism does not come equipped with an answer.

In conclusion, if one considers that comprehensive doctrines *must* display a set of clear normative commandments (as in Abrahamic religions) or a minimal guide for imperative action (as in deontological accounts) or a mechanical procedure to determine whether certain actions are right or wrong (as in Utilitarianism), then Darwinism does not deserve to be named as such. However, Rawls’s own examples depict fragmentary conceptions of the good. Many of them have little to say on metaphysical issues or about the meaning of life. Thus, the absence of one of the features for a comprehensive doctrine is not reason enough to exclude it from the broader category if the other features are present. Darwinism would still qualify as a partial doctrine.

5. An Ockhamistically Naturalistic Worldview

The crucial question of this section is whether the expansiveness of Darwinism is an illegitimate move or an unavoidable implication of the scientific theory.³⁶ If the former, then we should reject its comprehensiveness altogether: while it is true that some people see Darwinism as a holistic way of making sense of the world, these people is doing something

³⁵ To be sure: I do believe that culture rises well above and beyond biology. It is a sort of truism that genetic explanations for culture cannot be fully correct because cultural change is much quicker than genetic change. As Albert Weale has pointed to me, it might be the case that cultural evolution is rather Lamarckian, with active learning on the part of individuals and groups, so one cannot simply transpose the Darwinian criterion of success – population reproduction – to the cultural domain, which might have its own criterion of success. I am not lending support to such transposing strategy, but to the very basic idea that ultimate moral traits could have been slowly carved through our animal history.

³⁶ As the British journalist Andrew Brown eloquently observed, “the Darwin Wars are not between believers and disbelievers in evolution, or in Darwinism. They are about the scope and proper limits of Darwinian explanations” (1999: 18).

intellectually impermissible. Accordingly, we might be able to save the scientific theory from its secular worshipers. Importantly, the Asymmetry Objection will prevail and the substantive CC will be discarded. But if the latter is correct, then it might be impossible to disentangle the science from the metaphysics. In other words, if Darwinism and philosophical naturalism cannot be sold separately, the Asymmetry Objection fails.

Alvin Plantinga -one of the leading Protestant philosophers in the US- believes that Darwinian evolution includes as far as the natural selection thesis but it does not include what he calls the “naturalistic origins thesis”, which is basically the idea that life developed from non-living matter “without any special creative activity from God but just in virtue of processes described by the ordinary laws of physics and chemistry” (2011: 9). Plantinga believes that the “naturalistic origins thesis” is a metaphysical addition to plain evolutionary theory. Therefore, he argues, the philosophical conflict is not between evolution and theism, but between naturalism and theism. It is naturalism which serves as “a sort of total way of looking at ourselves and our world”, leaving nothing outside of its purported jurisdiction.³⁷ The problem with naturalism is that it is evidently atheistic.³⁸

Along with Plantinga, the former Pope Joseph Ratzinger has strongly denounced the utilization of evolutionary biology as an intellectual point of departure for a comprehensive explanatory claim. In Ratzinger’s view, “evolution has been exalted above and beyond its scientific content and made into an intellectual model that claims to explain the whole of reality and thus has become a sort of *first philosophy*” (cited in Horn & Wiedenhofer, 2008: 9). The Darwinian threat is therefore its potential to develop into a *philosophia universalis*, able to ground a whole “new ethos based on evolution” (cited in Horn & Wiedenhofer, 2008: 21). In this wide-ranging facet, Darwinism unavoidably competes with traditional theism. However, both Plantinga and Ratzinger agree that this *should not* be the case, and therefore that the comprehensive reading can and must be avoided.

³⁷ In Plantinga’s assessment, “Naturalism plays many of the same roles as a religion... it gives answers to the great human questions: Is there such a person as God? How should we live? Can we look forward to life after death? What is our place in the universe? How are we related to other creatures? Naturalism gives answers here... As to our place in the grand scheme of things, we human beings are just another animal with a particular way of making a living. Naturalism isn’t clearly a religion; but since it plays some of the same roles as a religion, we could properly call it a *quasi-religion*” (2011: x).

³⁸ As the philosopher Evan Fales explains, naturalism “entails atheism, conceived minimally as the denial that there is an all-powerful, omniscient, perfectly good disembodied personal being who has created the physical universe. Naturalism [is therefore a] natural ally of atheism, and [offers] a philosophical framework within which atheism finds a natural home” (2007: 118).

Phillip Johnson has articulated a different opinion. Like most hard-line creationists, he thinks that evolutionary theory in the classroom works as an ideological artefact wielded by militant secularists to attract children into the naturalistic worldview. But Johnson does not think that scientific evolution has been illegitimately sprinkled with some metaphysical dressing. Much to the contrary, he holds that orthodox Darwinians cannot help but to blur the boundaries and radiate their theory into other fields of knowledge. “Metaphysics and science”, Johnson argue, “are inseparably entangled in the *blind watchmaker* thesis” (2010: 202).³⁹

My own view is as follows: as shown in the previous sections, the inherent logic of Darwinian processes triggers a series of plausible philosophical implications. This logic is self-sufficient. This means that it does not need additional hypotheses to achieve its explanatory ends. Specifically, it does not need to resort to any top-down agency to account for any step in the road. To this extent, it makes divine intervention superfluous. In the absence of such an addition, Darwinism is naturalistic by default. This is the crux of the matter: Darwinism does not affirm that the theistic god is *not* participating through special acts of creation; it just does not have to bring such an unnecessary hypothesis on board. Darwinism does not need to claim that evolutionary change is unguided or unintended by a divine intelligence; it does perfectly fine without any kind of supernatural direction to account for its workings. To put it differently, Darwinism is *ockhamistically* naturalistic.⁴⁰ Of course, theologians can reply that their God is not subjected to this reasonable but ultimately human-made principle.⁴¹ But the fact that they should justify this superfluity reveals that it is theism that must provide a metaphysical addition to square the evolutionary circle. God might act in mysterious ways, but Darwinism does not. Therefore, evolutionary theory does not necessitate a positive metaphysical assertion against God’s intervention to be naturalistic; it is naturalistic by the

³⁹ Johnson notes that “most theistic evolutionists accept as scientific the claim that natural selection performed the creating, but like to reject the accompanying metaphysical doctrine that the scientific understanding of evolution excludes design and purpose. The problem with this way of dividing things is that the metaphysical statement is no mere embellishment but the essential foundation for the scientific claim” (2010: 202).

⁴⁰ In simple terms, Ockham’s principle, valid in sciences and well as in philosophy, states that when confronted with two possible explanations for an occurrence, we should take the simplest one. Another way of putting it is that the more assumptions you must make, the more unlikely an explanation is. In in this case, Ockham’s razor would work as follows: if supernatural (or immaterial) hypotheses are not needed to account for a given phenomenon, then naturalistic (or material) hypotheses should be instead selected.

⁴¹ As the German philosopher Robert Spaemann has remarked, “a Creator with unlimited power is not subjected to Occam’s razor” (2008: 68). In turn, Plantinga has recalled that theists who “already accept divine design... do not incur additional Ockhamistic cost by way of thinking of evolution as guided” (Dennett & Plantinga, 2011: 14).

rule of parsimony. Consequently, it might be interpreted as atheistic in the same narrow sense.⁴²

There is a second consideration that contributes to the image of Darwinians as advocates of a naturalistic world picture: most of them are reductionists. As Ratzinger denounced, Darwinism tends to derive all reality from evolution, “[accounting] for knowledge, ethics, and religion in terms of the general scheme of evolution” (cited in Horn & Wiedenhofer, 2008: 9). Perhaps the most outspoken philosopher against this seemingly irresistible inclination is Thomas Nagel, an avowed atheist who refuses to submit to the conclusions of materialistic reductionism. As the term *worldview* could be too vague, Nagel refers to Darwinism as a *Weltanschauung* to specify a comprehensive and speculative understanding of the world “that is reached by extrapolation from some of the discoveries of biology, chemistry and physics” and that “postulates a hierarchical relation among the subjects of these sciences, and the completeness in principle of an explanation of everything in the universe through their unification” (2012: 4). Nagel acknowledges that this is the mainstream view among scientists, but he thinks it ultimately fails. However, that is another matter. Our inquiry is whether evolutionary theory could be a plausible *Weltanschauung*. Here, Nagel asserts that Darwinism and theism are in a symmetrical position in their comprehensiveness. Both would represent all-encompassing doctrines struggling to make sense of the world; both worldviews asserting that, at the ultimate level, “there is [just] one form of understanding” (Nagel, 2012: 22).

Although reductionism is sometimes used as a defamatory term, Darwinians do not escape from it. They embrace it. The philosopher Daniel Dennett welcomes the Darwinian power to give a unified account of “just about everything in one magnificent vision... [where] life and all its glories are thus united under a single perspective” (1995: 82, 144). Perhaps nobody has done more intellectual work to advance this reductionist view than the biologist E. O. Wilson – according to John Gray, “the greatest contemporary Darwinian” (2002: 5) - who

⁴² Daniel Dennett has pointed out that “undermining the best argument anybody ever thought of for the existence of God is not, of course, proving the nonexistence of God”, so “many careful thinkers who have accepted evolution by natural selection as the explanation of the wonders of the living world have cast about for other supports for their continuing belief in God” (2007: 139). Therefore, Darwinism is *not* a defeater for religious belief as such, but only for the belief that places high hopes on the argument from design. Hence Richard Dawkins’ famous phrase: “Although atheism might have been logically tenable before Darwin, Darwin made it possible to be an intellectually fulfilled atheist” (1986: 6). It is important to recall that the scientific superfluity of the supernatural is not a problem for those theological perspectives that hold, following Augustine and Aquinas, that “God delegates causal efficacy to the created order” (McGrath, 2015: 113). For them, superfluity is even a liberating feature.

has tirelessly argued that organic evolution is the key to understanding all the features of animal and human nature. Wilson has proposed that Darwinism should be understood as the core of a scientific materialist worldview, destined to replace the role of religious myths. People need a sacred narrative. But “if the sacred narrative cannot be in the form of a religious cosmology, it will be taken from the material history of the universe and the human species” (1998: 295). Thus depicted, Darwinism appears more religious than ever.⁴³

To this view, science is legitimately and impenitently pervasive: all the material world -all that it is- could be explained away within its categories. Every phenomenon could be in principle reduced to a scientific explanation.⁴⁴ Darwinism would be the poster-child of this magnificent enterprise. Although they do suggest interesting philosophical reflections, no comprehensive doctrine seems to arise from the Big Bang theory or quantum physics alone. It should not strike us as surprising, as the Nobel laureate in Physics Steven Weinberg has pointed out, “that it is reductionism in biology and the theory of evolution rather than the discoveries of physics and astronomy that continue to evoke the most intransigent opposition” (1992: 189).

Interestingly, with Weinberg there is the feeling that something valuable has been lost due to the systematic uncovering of (scientific) truths about ourselves and our place in the universe. He thinks that this reductionist worldview is chilling and impersonal. However, unlike Nagel, Weinberg believes that “it has to be accepted as it is, not because we like it, but because that is the way the world works” (1992: 53). Again, how depressing or uplifting an interpretation of reality is should not condition our judgment about its comprehensiveness. Nihilism might be depressing, but it is a philosophical outlook nonetheless. Other thinkers have read Darwinism in a more optimistic light. Against the Weberian prophecy that enchantment could only be experienced in a world imagined as teleological and transcendently grounded, George Levine has assembled a powerful argument for a meaningful life in a universe entirely explicable in terms of natural processes, a radically secular and reenchanting Darwinian worldview.⁴⁵

⁴³ As George Levine states, “there is a quasi-religious aspect to Wilson’s project, and he would not deny it” (2006: 109). But, as Levine also notes, “reductionists are above all insistent that their work is not ideological - that it is simply scientific” (2006: 56).

⁴⁴ Wilson has made an even stronger plea to base the humanities in the natural sciences, insofar as the “scientific worldview is vastly larger. It encompasses the meaning of human existence- the general principles of the human condition, where the species fit in the Universe, and why it exists in the first place” (2014: 174).

⁴⁵ In Levine’s terms, “Darwin’s work of sweeping away the teleology of natural theology and subjecting all biological phenomena to scientific explanation [is] nevertheless fully compatible with a sense of a world deeply infused with value, enchanted... As we follow Darwin’s tough *geodicy* we find ourselves in a world of wonders, a world worth loving; we become participants and observers in a life larger than any of us, and more

In sum, Darwinism can be reasonably presented as a (partial) comprehensive view that is naturalistic by default, with a tendency towards reductive materialism. This is not to abdicate its scientific core. Evolutionary theory is first and foremost a scientific theory, but it is not *just* a scientific theory. Even Gould and Coyne -whose arguments against the comprehensiveness of evolutionary theory were presented as part of the Asymmetry Objection-, cannot help but to acknowledge it. Gould was entirely aware that Darwinism can profoundly affect humanity's self-image. He believed that, after Darwin, the only way to think about our species as enjoying a preferred status was due to dangerous and unjustified arrogance. He understood evolution too well to ignore the radical philosophical implications of the scientific theory.⁴⁶ In turn, Coyne argues that, over history, science has delivered two crippling blows to the sense of human superiority. The first was Galileo's announcement that our planet was not the centre of the universe. The second were Darwin's findings.⁴⁷ Therefore, if Darwinism can "dethrone some of the deepest and most traditional comforts of Western thought" (Gould dixit) and to "demolish the comforting notion that we are unique among all species" (Coyne dixit), it seems implausible to confine it to the bookshelf of sterilized science.⁴⁸

meaningful" (2006: 32, 25). It might be noteworthy that Dworkin rejected that naturalism could be religious even in a broadly spiritual sense, because it was not an awe-inspiring experience. Levine's picture of Darwinism proves differently: Darwinism "wants to short-circuit the inference from wonder to the transcendent, but not to deny the wonder of its importance" (2006: 145). Paraphrasing William James, a fully Darwinian appraisal of the world could be a variety of religious experience.

⁴⁶ In Gould's own terms, "the radicalism of natural selection lies in its power to dethrone some of the deepest and most traditional comforts of Western thought, particularly the notion that nature's benevolence, order, and good design, with humans at a sensible summit of power and excellence, proves the existence of an omnipotent and benevolent creator who loves us most of all (the old-style theological version), or at least that nature has meaningful directions, and that humans fit into a sensible and predictable pattern regulating the totality (the modern and more secular version). To these beliefs, Darwinian natural selection presents the most contrary position imaginable" (1997).

⁴⁷ Here we witnessed the demolition of "the comforting notion that we are unique among all species--the supreme object of God's creation, and the only creature whose earthly travails could be cashed in for a comfortable afterlife" (Coyne, 2009a).

⁴⁸ At this point, I would like to address two related objections that have been recently suggested to me. Both point to the difference between *some* people using a Darwinian framework to make total sense of the world and Darwinism as a comprehensive theory in a Rawlsian sense. According to Sune Laegaard, people can believe whatever they want, but even the plausible philosophical insights triggered by a scientific theory such as Darwinism play a role which is ultimately distinct from the normative role that a comprehensive doctrine is supposed to play. In turn, Albert Weale has argued that because some Darwinians do extend their explanatory model in a more comprehensive way, I am inclined to believe that they are logically entitled to do so. But whether they are logically entitled to do so is what is being contested. To Laegaard's objection, I reply that it is precisely the indeterminacy of comprehensive doctrines what allows me room for speculation. He adds that explanation is not meaning. This might be right in many cases, but not in others where the force of the explanation does not leave meaning unscathed. To Weale's point, I reply that I am sympathetic to the idea that Darwinians and Creationists are at least minimally entitled to understand the Darwinian framework as expansive

6. Darwinism's Friends and Foes.

Comprehensive doctrines coincide and conflict with each other in different respects. Placing neo-Darwinism in an equal-standing dialogue with other philosophical points of departure will help us to have a better understanding of its character as a competing worldview.

6.1 Darwinism and liberal comprehensive views.

Prima facie, the evolutionary perspective is at odds with Kantianism. On the one hand, Darwinism argues that morality is an adaptation. Thus, it evolves over time. Crucially, it mutates depending on whether the conditions for reproductive fitness change. Morality, under this lens, ceases to be absolute and necessary. Instead, it appears to be relative and contingent. But Kantian ethics refer to immutable norms about what is right or wrong.

On the other hand, while Kant affirmed that we should overcome the rule of natural inclinations to be autonomous beings, Darwinism suggests that our innate dispositions deserve a fair hearing. Most likely, along with Hume, a Darwinian will concede that reason should heed the call of the passions.⁴⁹ Whereas Kant articulates a notion of moral freedom as freedom *from* nature, Hume and Darwin appear to defend that any relevant freedom is deployed *within* nature. From the Humean-Darwinist perspective, the satisfaction of human desires constitutes a primary goal. We cannot help but to obey our gene-masters, especially if paramount matters such as survival and reproduction are at stake. Theoretically, no Darwinian doctrine would allow adaptive fitness to decay in the long run in the name of any categorical imperative.⁵⁰

It is noteworthy that Darwinism has also been presented as antagonistic to some foundational liberal views on natural rights —such as Locke's. The claim is that no such thing as inalienable fixed rights could ever be born from a Darwinian account (Lawler, 2013). Nonetheless, for E. O. Wilson, this feature should not lead us to think that modern human

in the way described. I am not just noting that some people believe that Darwin's idea has inherent extensive properties, but that there is a fairly good case to think that.

⁴⁹ Recall that Hume argued against the idea that we should grant reason dominion over our allegedly contrary passions. He stated that reason provides information about different means to our goals already defined by our passions. This information can, of course, affect the direction of the will. But reason alone cannot move us to action. Hume believed that the impulse to act always comes from our natural inclinations. Hence his famous passage in *A Treatise of Human Nature* (1739) about reason being the "slave of the passions".

⁵⁰ Michael Ruse has already suggested that "the spirit of Kantianism is antithetical to the spirit of Darwinism" (1998: 265). The Catholic and anti-Darwinian ethicist Benjamin Wiker has also stated that "obviously, the liberal moralist at greatest odds with Darwinism is Immanuel Kant" (2013: 45).

rights cannot be grounded on Darwinian considerations. He points out that there is a *mammalian imperative* which accounts for our basic evolutionary needs. Its recognition should thus justify the existence of a set of fundamental rights which allow us to pursue such crucial imperatives without significant hurdles. Human rights would be natural, after all, but in a wholly different sense: we are not endowed with them; we just need them to fulfil our Darwinian urges against the avidity of political power.⁵¹

What about Utilitarianism? There is some room for agreement. As indicated, Darwinism makes survival and reproduction paramount goals. In the case of humans, there are usually more chances for survival and reproduction when individuals and societies are flourishing. Conversely, it is harder to thrive in a world plagued by death and destruction. Hence, it is in our best evolutionary interest to avoid conditions of pain and deprivation. Conditions closer to happiness are preferred. Thus, actions will be judged by looking at their evolutionary consequences and not examining the agent's intentions. Hence the utilitarian connection: Darwinians will most likely agree with the injunction to promote happiness and prevent suffering.⁵² But this link cannot be overstated. To achieve evolutionary aims -such as the propagation of our genes- humans have committed more than a fair share of abuses such as territorial violence, rape and other behaviours that are far from promoting happiness.⁵³ Contemporary Darwinians might retort that we should encourage those social arrangements that increase our *collective* wellbeing in line with the theory of group selection. If this is the case, the *greatest good of the greatest number* will rest on our opposition to socially destructive practices. The relation nonetheless is not completely specified nor entirely convincing.

6.2 Darwinism and critical perspectives.

Darwinism has a controversial relationship with Marxism - “the two great secular faiths of our day [that] display all religious-looking features”, according to Midgley (2002: 17). It has

⁵¹ In Wilson's words, “the individual strives for personal reproductive success foremost and that of his immediate kin secondarily; further grudging cooperation represents a compromise struck in order to enjoy the benefits of group membership... We will access to universal rights because power is too fluid in advanced technological societies to circumvent this *mammalian imperative*; the long-term consequences of inequity will always be visibly dangerous to its temporary beneficiaries. I suggest that this is the true reason for the universal rights movement and that an understanding of its raw biological causation will be more compelling in the end than any rationalization contrived by culture to reinforce and euphemize it” (1978: 199).

⁵² Michael Ruse has recognized that “the Darwinian agrees with the Utilitarian that happiness is an important desired end in life”, adding that “the Utilitarian perspective on the nature of morality meshes comfortably with the Darwinian approach to such thought and behavior” (Ruse, 1998: 236-237).

⁵³ Regarding rape, see the controversial book *A Natural History of Rape: Biological Bases of Sexual Coercion* (2000) by biologist Randy Thornhill and anthropologist Craig T. Palmer.

been reported that both Friedrich Engels and Karl Marx were early followers of Darwin's work. As the story goes, Marx was happy that the English naturalist had discovered the law of organic change without appealing to any providential intervention or teleological direction. This lent support to his own intuitions about the law of political and social development.⁵⁴ However, at the same time, Marx was less convinced by the Malthusian emphasis that Darwin put on the unavoidable struggle for scarce resources: how would it be possible to build an economy of solidarity if we are *made* for crude competition?

From the sixties onwards, Marxists have faced the uncomfortable conclusions of the sociobiological approach. Wilson's idea that "genes hold culture on a leash" (1978: 167) was utterly problematic for an ideology that firmly believes in the malleability of human beings. To be sure: Darwinism is not asserting that cultural change –via political, economic or social structures- is impossible; it is mainly pointing out that our genetic composition places some relevant constraints on such ambitions.⁵⁵ After all, as biologists are keen to recall, culture is a very recent invention in the big evolutionary picture. Hence, Darwinism stands in opposition to the utopian dream of creating a new brand of man. It does not dispute that history could be understood as the interplay of economic forces and processes; it just points

⁵⁴ In 1859, when *The Origin of Species* was still fresh in the bookstores, Engels told Marx in a letter that "The Darwin, which I am just reading, is really stupendous. Teleology in one respect had still not been finished off hitherto: it is now. Moreover, there has never yet been such a magnificent attempt made to demonstrate historical development in nature, or at least not so happily. Of course, you have to pass over the crude English method". When Marx read it shortly afterwards, he concurred: "Darwin's book is very important and serves me as a natural-scientific basis for the class struggle in history. One has to put up with the gross English mode of development, of course. Despite all deficiencies, not only is the death-blow dealt here for the first time to *teleology* in the natural sciences, but its rational meaning is empirically explained". For a review of these correspondences, see Valentino Gerratana's *Marx and Darwin* (1973). A skeptical account of this relation can be found in Terence Ball's *Marx and Darwin: A Reconsideration* (1979). A recent contribution to this debate can be found in Tristram Hunt's biographical account of Friedrich Engels. To Hunt, the crucial difference between the founding fathers of communism and their Soviet heirs was that the former came "to a scientific appreciation of their political philosophy during the 1860s and 70s as part of an attempt to redefine historical materialism in light of Darwinism and other advances in the natural and physical sciences" (2009: 366-367), while the latter went directly from Hegel to communism without scientific stops along the way. The "ideological awakening" of the early Marxists, as Hunt recounts, began with "an immersion in the works of Charles Darwin, Herbert Spencer and the positivist Auguste Comte", which led them to "read Marx and Engels from a more obviously organic, evolutionary perspective" (2009: 367).

⁵⁵ In this sense, Levine has explained that sociobiology –a legitimate Darwinian offshoot in his assessment- denies any commitment to the idea of biological determinism, but it is "certainly committed to the view that the biological inheritance is so powerful that it significantly limits the possibilities of human freedom" (2006: 55). This, again, possess an undeniable Humean flavor, as the Scottish philosopher thought that "the utmost politicians can perform, is to extend the natural sentiments beyond their original bounds; but still nature must furnish the materials, and give us some notion of moral distinctions" (1817: 208).

out that Marx, Engels and their disciples got human nature wrong. Hence Wilson's reproachful statement: "Marxism is socio-biology without biology" (1978: 191).

But not all utopian thinkers have accepted that Darwinian evolution moves through unrestrained and brutal competition. Some anarchists, prominently Peter Kropotkin, maintained that cooperation is *as* important -or even *more* important- than competition as a factor for evolution, in all kinds of animals including human societies.⁵⁶ It is the unsociable species, in Kropotkin's reading of Darwin's law, the one doomed to decay. On the contrary, societies that practice solidarity thrive in Darwinian terms. Therefore, the Spencerian picture was wrong not because it was morally problematic but because it was grounded on poor observation. Darwinism, Kropotkin proposes, can serve as an ethical foundation, as long as we recognize that its cornerstone is mutual aid and not ceaseless struggle.⁵⁷

Even more tense is the relationship between evolutionary philosophy and feminism. The latter accuses Darwinism of grounding gender roles and hierarchical positions within the familial and social structure in an allegedly objective scientific theory. The feminist critique is aimed, more generally, at the general inclusion of "nature" in normative debates.⁵⁸ From this perspective, Evelyn Reed (1978) has taken up arms against what she understands as a version of Darwinian sexism. The fundamental problem, as Reed explains, is that sociobiology uses patterns of primate, mammal and animal behaviour to rationalize -and therefore normalize- situations in which women experience oppression. Feminists accuse Darwin of interpreting animal behaviour along the canons of conventional Victorian models. The evolutionary role played by sexual selection has been another controversial issue. Darwin included sexual selection in his theory to acknowledge the evolutionary power of female choice: it is to the species' advantage for females to choose reproductive partners with good genes and inclined to care for their offspring. Some philosophers read this feature as a recognition of female agency in directing the course of evolution. But, the feminist argument

⁵⁶ To Kropotkin, competition was overestimated since "there is, at the same time, as much, or perhaps even more, of mutual support, mutual aid, and mutual defense amidst animals belonging to the same species or, at least, to the same society. Sociability is as much a law of nature as mutual struggle" (2014: 14).

⁵⁷ In any case, it has been said that Darwin referred to the *struggle* for existence in a large and metaphorical sense, thus including strategies of competition and cooperation altogether.

⁵⁸ As Elizabeth Gross describes, "within feminist literature and politics, nature has been regarded primarily as a kind of obstacle against which we need to struggle, as that which remains inert, given, unchangeable, resistant to historical, social and cultural transformations" (1999: 31). One of the most prominent figures upholding the feminist critique of science has been Sandra Harding, for whom the whole method is oppressively biased against women. See Harding's *Whose Science? Whose Knowledge? Thinking from Women's Lives* (1991). A response to such critique can be found in Daphne Patai and Noretta Koertge's *Professing Feminism: Education and Indoctrination in Women's Studies* (2003).

goes, this is also another way of perpetuating gender differences from the biologist's pulpit (Jann, 1994). To my mind, a fully developed account on the proper relation between feminism and Darwinism is still missing.

6.3 Darwinism between right-wing and left-wing politics.

Darwinism is sometimes taken to support right-wing policies and, at other times, to support left-wing ideas. This is not necessarily a philosophical problem: the fertility of ideological interpretations over a theory does not condition its comprehensiveness. There are right and left-wing Hegelians as there are right and left-wing Utilitarians. From the same starting point, different ends can be reached.

The anti-Utopian features of the Darwinian discourse have been linked to a broader conservative view. As we have already hinted, evolutionary biology puts constraints on the perfectionist impetus that characterizes many progressivist movements. It reminds us that some things cannot change, at least not overnight. Darwinians are not fond of social engineering. As Wilson notes, "human nature is stubborn and cannot be forced without a cost" (1978: 147). Unsurprisingly, such a position has been read as a framework for a systematic defense of the *status quo*. Accordingly, a Darwinian argument is always a conservative argument. This is the stance adopted by a group of political scientists in the US, prominently by Larry Arnhart. They argue that the evolutionary paradigm provides suitable intellectual grounds for a conservative political philosophy and a wide range of right-wing policies. As Arnhart (2005) stresses, Darwinists are more aware than anyone else that human beings are ultimately imperfectible, that inborn instincts and customary traditions shed light about our inner nature, that family life and gender differences play a crucial role for social stability, that our tendency to private property is anything but artificial, and so on. From these coordinates, Darwinian conservatives conclude that the role of governments should be limited. Coincidentally -in terms of a political agenda- this approach draws from the work of F.A. Hayek to compare the undirected character of natural selection with the spontaneous order of free markets. Both mechanisms, the argument goes, resemble Adam Smith's invisible hand.⁵⁹ But the efforts to wed Darwin with the political right-wing in the US have been received with scepticism. Most conservatives are not willing to abandon creationist

⁵⁹ The skeptic author Michael Shermer has made this comparison to persuade neoliberal-minded citizens to embrace Darwin. Shermer explains that "Darwin showed how complex design and ecological balance were unintended consequences of competition among individual organisms. Smith showed how national wealth and social harmony were unintended consequences of competition among individual people. Nature's economy mirrors society's economy. Both are designed from the bottom up, not the top down" (2006).

views. They are much too accustomed to think of Darwinism as a materialistic ideology that leads to moral perversion and away from national values. They believe that heeding Arnhart's advice will be –all things considered- much more undermining than beneficial to their conservative and classical liberal tenets.⁶⁰

From the other side of the spectrum, the philosopher Peter Singer has vouched for a new Darwinian Left. Singer urges his ideological tribe to acknowledge that humankind is not completely malleable, as the radical Leftist tradition has hitherto thought. Nature, he warns, is more than an ensemble of social relations. Again, some things will not be fundamentally changed. A Darwinian Left, accordingly, should take seriously that “we bear the evidence of our inheritance, not only in our anatomy and DNA, but in our behaviour, too” (Singer, 1999: 6). In practical terms, this recognition means that there are certain facts about our nature which cannot be discursively disregarded as mere cultural inventions, oppressive strategies or weapons of domination. On the contrary, evidence from the natural sciences should be referential to develop renewed insights for the noble dream of building a more equitable world. Among these, the fact that people will always act competitively under certain circumstances, that the pursuit of social status is an indelible mark of our reproductive aspiration, that the tendency to favour our relatives should be regulated but will never be eradicated, that diverse forms of social cooperation are possible but they must be perceived as beneficial to all if we want them to be successful, and so on.

6.4 Darwinism vs. Humanism.

Finally, it is commonly believed that people who hold a Darwinian view of our origins and a purely materialistic understanding of the universe also express the moral values of secular humanism. Insofar as pure cosmic tales do not provide moral prescriptions, and we need prescriptions to live a good life, the normative component should be found elsewhere. This is indeed the case with most atheists in liberal societies: they are metaphysical naturalists when it comes to answering one set of questions -where do we come from, where are we heading to- and ethical humanists when answering another -how should we live our lives. It seems a reasonable division of the philosophical labour. Only it is not that simple.

First, naturalism goes beyond what is required for an average humanist. Although it might be statistically true that most humanists are metaphysical naturalists, not all of them are

⁶⁰ For a series of responses and critical reviews to different aspects of the notion of Darwinian conservatism, see Stephen Dille's (ed.) *Darwinian Evolution and Classical Liberalism. Theories in Tension* (2013).

willing to deny the existence of spiritual realities transcending matter. In other words, humanists can be atheists in a minimalistic sense –that there is no such thing as a personal God watching our steps and evaluating the merits of our prayers- but at the same time remain sceptical of the claim that every reality can be reduced to non-teleological material processes.⁶¹ Hence, we cannot treat neo-Darwinism as an all-too-obvious companion for philosophical humanism after all. But the acutest criticism against this apparently harmonious intellectual marriage has been articulated by the English political philosopher John Gray. Darwinism, as Gray asserts, is fundamentally at odds with the type of liberal humanism that is professed in the Western world, for at least two related reasons. On the one hand, humanists seem to believe in the secular gospel of progress, which is entirely groundless from an evolutionary perspective. Darwinism is not necessarily a progressivist narrative.⁶² On the other hand, and more importantly, humanism is inclined to think about human beings as worthy of some special consideration. That is not consistent with Darwin’s theory, which “shows us the truth of naturalism: we are animals like any other; our fate and that of the rest of life on Earth are the same” (Gray, 2002: 31). The paradox, to Gray’s mind, is that modern-day humanists proudly assert that they have abandoned old-fangled religious faith but, in the end, they are basically mimicking Christianity and its promise of human salvation -only through immanent means.⁶³ A militant Darwinian should not believe such nonsense.

⁶¹ Describing the core beliefs of humanism, the British philosopher Stephen Law argues that humanists need not “embrace those brands of naturalism that say that the natural, physical universe is the only reality there is...” (2011: 4). Yes, he goes on, “humanists reject, or are at least agnostic concerning belief in gods, angels, demons, and so on, but that doesn’t require that they sign up to naturalism” (Law, 2011: 4).

⁶² There are many ways to interpret the notion of progress, but none is promising from an evolutionary perspective. If by progress we mean beneficial change, natural selection can go one way or the other. If by progress we mean reproductive success -the size of a population-, then the world of insects is vastly more successful than ours. As the geneticist J. B. S. Haldane humorously put it, if there is a God, he must have “an inordinate fondness for beetles”. Paraphrasing Gould, this is the Age of Bacteria... as it has always been. If by progress we mean complexity, then we should consider that sometimes in nature less is more. An increase in complexity is welcomed if it enhances fitness. But a decrease in complexity will be better if that is what enhances fitness. The antelope is becoming faster and faster through the generations. But its predator too. There is not much point in that kind of progress if it leads to an anatomical arms race. Finally, humans might want to believe that their unbeatable cognitive capacities *should* represent an evolutionary pinnacle. But, as Steward-Williams observes, “the fact that we possess traits such as reason, language and morality, whereas other animals don’t, is not because we are more evolved than they are, any more than the fact that some animals possess a superior sense of smell or a greater propensity towards violence means that they are more evolved than us. We are equally evolved” (2010: 175). In other words, there is no such thing as a more evolved species, we just evolved in different directions. There is no overall trend towards improvement.

⁶³ This idea is also present in Harari’s grand-history of Homo sapiens: “...a huge gulf is opening between the tenets of liberal humanism and the latest findings in life sciences, a gulf we cannot ignore much longer. Our liberal political and judicial systems are founded on the belief that every individual has a sacred inner nature, indivisible and immutable, which gives meaning to the world, and which is the source of all ethical and political authority. This is a reincarnation of the traditional Christian belief in a free and eternal soul that resides within

Darwinians are supposed to feel uncomfortable with any claim that assumes human supremacy. Following Peter Singer's nomenclature, an intellectually coherent Darwinian rejects *speciesism*. Consequently, even though most humanists point to Darwin to explain the foundations of their non-theistic beliefs, taking Darwinism seriously might mean abandoning secular humanism as it is commonly conceived.⁶⁴ The idea of *species egalitarianism* has radical implications, both theoretical and practical. From laws to lifestyle, many things should change in a society arranged along this principle.⁶⁵

Drawing on these insights, it is tempting to see neo-Darwinism as a philosophical outlook that fits nicely with the sort of Deep Ecology which advocates that all living beings deserve the same moral status regardless of their instrumental utility to human needs. As it has been described, Deep Ecology goes beyond the factual scientific level and "attempts to articulate a comprehensive religious and philosophical worldview" (Devall and Sessions, 2010: 454). Here, the natural environment itself acquires a sacred meaning.⁶⁶ There are indeed common themes between evolutionary reductionism and ecological consciousness: both contend that human beings are not fundamentally separated, isolated or superior to the rest of the natural world. The problem is that, being the voracious and predatory primates that we are, our evolutionary success is to some extent linked to the partial destruction of the natural world. It is undeniable that, in many respects, the Earth would be better off without us around. Here, the Darwinian mind faces a predicament: should it issue an ethical condemnation on such a survive-and-reproduce strategy, bad for the planet but useful to humans?

each individual. Yet over the last 200 years, the life sciences have thoroughly undermined this belief. Scientists studying the inner workings of the human organism have found no soul there. They increasingly argue that human behaviour is determined by hormones, genes and synapses, rather than by free will –the same forces that determine the behaviour of chimpanzees, wolves and ants. Our judicial and political systems largely try to sweep such inconvenient discoveries under the carpet. But in all frankness, how long can we maintain the wall separating the department of biology from the departments of law and political science?" (2014: 263). I will come back to this thought by the end of the thesis.

⁶⁴ As the philosopher of science Steve Fuller concludes, Humanism is indeed a philosophical doctrine "that bears little scrutiny from the species egalitarian standpoint of strict Darwinism" (2010: 76).

⁶⁵ Hence Singer's challenge to Richard Dawkins and the rest of the Darwinian activists to abandon meat-eating, to which Dawkins responded that while it was true that killing certain animals for food was unethical, he just could not stop doing it.

⁶⁶ At this point, it might be worthwhile to mention the Gaia Hypothesis. James Lovelock's Gaia theory, in its classic formulation, states that earthly organisms interact with their inorganic counterparts to form a synergistic self-regulating system that provides the conditions for life. Lovelock once suggested that this global biological feedback was fueled by the mechanisms of natural selection. Hence, organisms that improve their environment for survival purposes do better in evolutionary terms than those that damage theirs. However, evolutionary biologists such as Ford Doolittle and Richard Dawkins have rejected this association, calling the Gaia theory unscientific and arguing that the sort of biological concertation that Lovelock suggests implies that organisms have foresight, which is exactly what Darwinian natural selection rules out.

Furthermore, from an evolutionary perspective, it might be said that we should take the perpetuation of human genes as a sacred goal. But this route ends in a zero-sum game between us and other life forms: our success might imply their extinction. Species conservatism can be a sensible Darwinian commitment –to the extent that it calls for a long-term moral vision that includes the prosperity of future generations while projecting the secular dream of genetic immortality- but that is not what deep ecologists have in mind. Still, as (partial) comprehensive doctrines, both assert the central value of biodiversity: even though the Darwinian practice -if not the theory- seems to be irredeemably inclined towards a mild form of *speciesism*, the idea of extending some form of respect towards non-human life forms must resonate in Darwinian ears.⁶⁷

A final note: because of its tendency towards reductionism, Darwinism has been read as an expression of Scientism, which is the view that science is qualified to answer -at least in principle- all the questions about reality, in all its dimensions. It is hard to provide a precise account on the relation between the evolutionary perspective and Scientism. It seems plausible to say that Darwinism fits within Scientism. But Darwinism does not entail Scientism. Darwinism stands for a scientific theory that explains some aspects of reality and sheds light on other fields, but it is not necessarily an exhaustive project. Even its in-built reductionism has limits. Recall that the evolutionary comprehensive perspective maintains that we have a sufficiently accurate picture of the world by appealing to purely physical, chemical and biological processes, but it does not affirm that the material is the only real thing in the universe. Darwinism is agnostic vis-à-vis whether there are other sources of meaning and value which are not grounded in the scientific project. Not every Darwinian should go all along with Wilson's exaggerated expectations about the total capacities of natural sciences. I will come back to the charge of Scientism towards the end of this thesis. For now, what matters is that Darwinism relates, interplays and communicates with other comprehensive doctrines -whether partial or total- on a symmetrical footing.

⁶⁷ Dennett has observed that the full acceptance of the evolutionary paradigm should “open [people’s] eyes to the dangers of pandemics, degradation of the environment, and loss of biodiversity, and informing them about some of the foibles of human nature” (2006: 268). This ethical concern has ceased to be purely naturalistic. The Vatican has recently added its own voice to the environmentalist cause, stating that the Biblical command to rule the Earth does not give humankind the moral right to absolute dominion over other creatures. -as it was previously thought in theological discussion. In the words of Jorge Bergoglio, Pope Francis, there is no place “for a tyrannical anthropocentrism” in our world (2015: 50).

Summary

What we have denominated the substantive CC states that evolutionary theory soars beyond its scientific content and develops into a comprehensive naturalistic world picture. Consequently, the argument goes, its exclusive teaching -thereby excluding creationist theories from science education- amounts to a violation of liberal impartiality regarding competing worldviews. Many political theorists and scientists alike have rejected this claim arguing that Darwinian evolution and creationist accounts are not symmetrical: the former does not amount to atheistic indoctrination in the same way that the latter do amount to the promotion of theism.

However, while it is true that the scientific theory of evolution is not aimed at discrediting religious doctrines, its philosophically subversive implications are hard to ignore. Whether contradicting the idea that life on Earth was teleologically driven, smashing the hopes of human specialness, explaining suffering better than any theodicy, doubting free will and accounting for knowledge in purely evolutionary terms, Darwinian evolution seems to provide grounds for a non-theistic metaphysical belief about the universe and humankind's place in it. Although it does not supply a set of ethical commands, the sociobiological interpretation of the history of life allows for an understanding of morality as an evolutionary adaptation. All in all, Darwinism appears as a naturalistic doctrine in *Ockhamistic* terms: whilst it does not assert that the only reality is the material one, it presents itself as a self-contained narrative with no need of supernatural elements.

Therefore, this work contends that the substantive CC cannot be thoroughly dismissed by appealing to its scientific origin. It appears to be both psychologically and logically impossible, at least to a certain point, to erect a wall of separation between cold science and the realm of values and meaning. From its appearance to this day, evolution has been read as the factual foundation of a broader philosophical -and even mythological- perspective covering a wide variety of issues and disciplines outside the dominion of natural sciences: metaphysics, ontology, epistemology, ethics, psychology, sociology, economics, sexual behaviour, politics, and even religious studies. Darwinism works, in Daniel Dennett's well-known passage, as a "universal acid" that "eats through just about every traditional concept, and leaves in its wake a revolutionized worldview, with most of the old landmarks still recognizable, but transformed in fundamental ways" (1995: 63). Through these Darwinian lenses, a cultural catch-all secular current tackles some of the most fundamental life questions. This represent, as Michael Ruse has put it, "a movement to see human beings in

a naturalistic fashion, this being set against more traditional attempts to locate human beings in a religious, a spiritual, a non-naturalistic world” (2009: 1).

Rawls did not mention Darwinian naturalism in his scattered review of comprehensive doctrines. But it should be clear by now that whether we were specially designed by a loving god or are the mindless products of material accidents should greatly matter to provide the basis for a comprehensive view in the Rawlsian sense.

III

The Scientific Claims of Religion

A response to the NOMA Objection

In the previous chapter, we explained the features of the substantive CC and deployed the reasons why the Asymmetry Objection is not strong enough to tear it down. In this chapter and the next one, the aim is to address the epistemic side of the CC. Some liberal theorists believe that attempts to introduce creationist views into the science curriculum should be rejected on different grounds. They do not refute that the evolutionary perspective might serve to form a worldview. They argue that liberalism simply cannot prevent such spillover from the scientific to the philosophical. Instead, the argument goes, we should be concerned about what is to be regarded as proper science and what is to be regarded as proper religion. Once these frontiers are rightly delimited, it will be obvious that creationism has nothing to do with science.

This is a common response to the CC: religiously-inspired accounts are just non-scientific. As such, they should remain outside the biology classroom. This means that political institutions should sanction a division of epistemic labor between different teaching authorities, with science and religion within their own distinctive compartments. This is not intended to downplay religion; on the contrary, advocates of this line of response are quick to note how important religious perspectives are to the human quest for ethical orientation and the search for ultimate meaning in life. Science, the argument goes, is fundamentally incapable of addressing such deep concerns. In turn, the scientific jurisdiction would extend to the material constitution of the natural world. This sort of ‘separate but equals’ arrangement reassures the liberal spirit in at least three senses. First, it avoids the reignition of the much-maligned historical tale about warfare between a pro-scientific and pro-religious side. Second, it is consistent with the intuition that the religious and the secular should travel parallel paths, and that the former cannot invade the latter’s sovereign territory. And third, it gives educational institutions under the pressure of vocal religious groups a seemingly respectful way out: once public opinion accepts that even sophisticated creationism is religion in disguise, Darwin shall reign unchallenged in the natural science textbooks.

The first section of this chapter recreates the theory of distinctive teaching authorities. It is a theory that relies on a preconception of what religion is and what it should be. The remaining sections explain why the Non-Overlapping Magisteria (NOMA) Objection fails. For several reasons, I shall contend that we cannot -and should not- confine religious claims to the limited sphere of morals and meaning. Thus, political liberals cannot rest on a theory of two independent and separate teaching authorities to ground their rejection of CC.

1. The Non-Overlapping Magisteria Thesis.

The view that science and religion belong to different areas of expertise and do not conflict with each other is not a new one. It has been advanced time and again that philosophers and historians want to dispute the popularized warfare narrative. Thomas Henry Huxley, one of the fiercest defenders of Darwin's ideas, made this principle of non-overlapping fields of inquiry the basis for his personal reconciliation of science and religion. Huxley -also known for fathering the notion of agnosticism- thought that religion belonged to the realm of feelings, while science belonged to the world of intellectual reflection. Both were equally valuable for the pursuit of a fulfilled life.¹ This idea was later reiterated by the celebrated biologist Theodosius Dobzhansky, who maintained that "science and religion deal with different aspects of existence. If one dares to schematize for the sake of clarity, one may say that these are the aspect of fact and the aspect of meaning" (1971: 96). For Dobzhansky -a Russian Orthodox Christian- religion was alien to the realm of factuality.

The late paleontologist Stephen Jay Gould constructed the most complete theory of non-overlapping teaching authorities or *magisteria*. Hence the acronym NOMA. According to NOMA, neo-Darwinism -or any other discovery in the natural sciences- can never really undermine theistic beliefs because these areas of knowledge and professional expertise do not overlap with each other. In Gould's understanding, science deals with "the factual character of the natural world" whereas religion operates "in the equally important, but utterly different, realm of human purposes, meanings, and values" (1999: 4). Therefore, no conflict arises if each subject has its own and exclusive *magisterium* or sovereign domain of

¹ In fact, Huxley believed that religion and theology were two different things. According to the Historian Bernard Lightman, Huxley maintained that "theology was only another branch of science because it dealt with facts; the validity of theological statements could be tested scientifically" (2014: 91). This distinction will be useful later on.

teaching authority. Apologizing for the cliché, Gould adds that scientists get “the age of rocks, and religion retains the rock of ages; science studies how the heavens go, religion how to go to heaven” (1999: 6). In exchange for asking religion to remain outside the scope of factual explanation, Gould promises that science will refrain from making claims pertaining to the realm of moral reflections and ethical judgments. This is not an isolated plea. The US National Academy of Sciences -arguably the most prestigious scientific institution on the planet- has issued several statements pointing out that creationism is religion, not science, and therefore it does not belong in the mandatory scientific curriculum. Their members are careful to add that “science and religion occupy two separate realms of human experience [and] demanding that they be combined detracts from the glory of each” (1999).

As it stands, Gould’s proposal is tempting for political liberalism. To the extent that science and religion do not argue about the same issues, there is no violation of liberal neutrality if state-funded schools were to teach neo-Darwinism alone: God was not supposed to belong in the biology classroom in the first place. According to Gould, all reported clashes between evolutionists and creationists have been typical misunderstandings of this fundamental ‘non-overlapping magisteria’ principle. The CC, as the principle states, is grounded on a misapprehension of the essential nature of religion. Furthermore, for the like of liberals - Gould was an iconic left-liberal intellectual in the world of natural sciences- NOMA has as undeniable Humean flavor as it echoes the *is – ought* distinction: we are not intellectually warranted to derive a moral command from a factual consideration. From a political standpoint, adopting Gould’s philosophical principle means an official demarcation of areas, where religion is confined to the search for ethical values and spiritual meaning. Creationists would be just trespassing into alien turf. This has implications when it comes to decide the content of the science curriculum.

A slightly modified version of the same argument has been articulated by philosophers and intellectuals stirred by the rise of the sometimes-called New Atheist movement. They accuse Dawkins, Dennett and Hitchens et al. of grossly misinterpreting the true character of religion: by portraying God as a scientific hypothesis to be confirmed or dismissed depending on the empirical evidence, the New Atheists are just revealing their rudimentary theological understanding (Armstrong, 2009; Eagleton, 2009). In truth, the argument goes, religion is not -and was never meant to be- an explanatory project about spatiotemporal factuality. It is not an intellectualist set of truth-propositions but rather an existential commitment. So, it has nothing to do with the prototypical scientific effort to make sense of the natural world.

In this vein, Mary Midgley argues that “a faith is not primarily a factual belief, the acceptance of a few extra propositions like *God exists* or *there will be a revolution*. It is rather the sense of having one’s place within a whole greater than oneself” (2002: 16). To Midgley’s mind, this religious sense does not need to involve any factual belief at all.² Along the same lines, the cultural theorist and intellectual-at-large Terry Eagleton has defended the idea underlying NOMA arguing that religion is far from being concerned about factual reality and cosmic explanations, and therefore “science and theology are for the most part not talking about the same kind of things, any more than orthodontics and literary criticism are” (2009: 10). Following Gould’s line of argument, Eagleton believes that the New Atheists are making “an error of genre, or category mistake, about the kind of thing Christian belief is” (2009: 6). In the believer’s mind, God does not behave as a mega-manufacturer or an interventionist ruler; he is “the reason why there is something rather than nothing” (Eagleton, 2009: 7). By extension, the criticism targets creationists, who are misunderstanding their very own faith. The problem with this type of fundamentalism, according to the Slovenian philosopher Slavoj Žižek, is that it sees religious and scientific statements as belonging to the same epistemic modality.³ To the sociologist Ryan C. Falcioni, religious claims cannot be expressed as hypotheses about the world because “they don’t function this way in the lives of believers in any noticeable way” (2010: 211). In a Wittgensteinian fashion, Falcioni wants to say that *meaning is in use*. What religious belief amounts to must be reflected in the lives of the believers, and they do not usually wait for evidential confirmation to believe in God or the supernatural. This way, religious claims do not serve as scientific hypotheses because they are not *assertional* enough. In sum, rather than being about a set of propositions or truth-claims, faith is about a set of existential commitments.⁴

² Midgley asserts that “the religion which does clash with science has left its own sphere, for bad reasons, to intrude on a scientific one, is bad religion” (2002: 14). Midgley compares creationism with Spencerism -Social Darwinism- because both “seem radically to confuse the functions of religion and science, attempting to produce an amalgam which will do the work of both. In doing so, both seem to distort not just the province which they are trying to take over, but also the one in whose name they want to make the conquest” (2002: 173).

³ Žižek notes that “the occurrence of the term science in the very name of some of the fundamentalists sects - Christian Science, Scientology- is not just an obscene joke, but signals this reduction of belief to positive knowledge” (2008: 31-32).

⁴ In this sense, Eagleton writes that “Christian faith, as I understand it, is not primarily a matter of signing on for the proposition that there exists a Supreme Being, but the kind of commitment made manifest by a human being at the end of his tether, foundering in darkness, pain, and bewilderment, who nevertheless remains faithful to the promise of a transformative love” (2009: 37). Falcioni shares this view: “A statement of religious belief is a statement about one’s life, one’s values, about ultimate things... To believe in a religious sense is an act of commitment... A mere intellectual assent to the propositions of a given faith (based on evidential arguments) is not what is meant by having religious beliefs. To be a Christian is to live in a certain way; to

The political implications of this view are at sight: if political institutions embrace NOMA and the view that religious claims cannot function as explanatory hypotheses to be explored like other scientific propositions, then creationists are just stepping outside of the boundaries of what religion is -or what it should be, if understood correctly. Accordingly, their claim should be thoroughly dismissed.

2. The Scientific Side of Religion.

The NOMA principle states that true believers must stop fighting science once and for all, and abide by their rulings over *how the heavens go*. In turn, atheists should stop pretending that science can penetrate the true mystery of life and let religion say *how to go to heaven*. Then, religious claims should be expelled from science's territory because they are of a fundamentally different character. I find this picture unconvincing for several reasons.

To begin with, most theistic religions do make factual claims. NOMA has been subjected to fierce criticism from both ends of the metaphysical spectrum. Within theological quarters, the idea has not been welcomed because it amounts to reducing religion to a moral philosophy, detached from any cosmic explanatory aim.⁵ An important number of scientists

accept the demand upon your life that Christ has made... To see belief in God as a tentative hypothesis is to distort the meaning of religious belief as seen in the lives of believers. Put simply, believers do not, generally speaking, believe in God because of the soundness of the evidential proof for the God Hypothesis. Their beliefs are not predicated upon any objective grounds" (2010: 218-219). The philosopher of religion Roy A. Clouser thinks that "a crucial point to keep in mind is that religious beliefs are not hypotheses, so pointing to confirming consequences of them cannot provide an argument to the best explanation as it can for theories" (2001: 530). The late philosopher Ian G. Barbour concurred: "I suggest that the concept of God is not a hypothesis formulated to explain the relation between particular events in the world in competition with scientific hypotheses. Belief in God is primarily a commitment to a way of life in response to distinctive kinds of religious experience in communities formed by historical traditions, it is not a substitute for scientific research" (2000: 14). However, Barbour seems to reject the compartmentalization spirit of NOMA, arguing that "dialogue and integration are more promising ways to bring scientific and religious insights together than either conflict or independence" (2000: 179).

⁵ Assessing Gould's proposal, Alvin Plantinga states that "of course this is much too strong: clearly most religions make factual claims: that there is such a person as God, that the world was created, that Mohammed was God's prophet and spokesman" (2001c:784). Elsewhere, Plantinga recalls that "some of the teachings most central to Scripture and to the Christian faith tell us of concrete historical events; they therefore tell us of the history and properties of things within the cosmos" (2001a, 117). The anti-materialist philosopher Robert C. Koons refers to the idea that science reigns undisturbed in the magisterium of fact as "Stephen Jay Gould's ominous phrase" (2003, 73). The Catholic cardinal Cristoph Schönborn has dubbed the NOMA principle as simply "untenable" (2008: 92). The social epistemologist -and ID apologist- Steve Fuller describes the motivation behind NOMA as "condescending" (2010: 65). Perhaps the boldest criticism of Gould's formulation comes from Phillip Johnson, who have argued that scientists who claim to respect religion are

also believe that many truth-claims identified with theistic traditions can -and perhaps should- be subjected to scientific assessment.⁶ The bottom line is that there are good reasons to think that political institutions would be making a mistake if they were to embrace NOMA as an official stance.

A conceptual clarification is in place here. Gould distinguishes between the *magisterium* of science and the *magisterium* of religion, as if they were two distinct domains of human inquiry. They are not. At a certain point, he changes the formulation and refers respectively to the *magisterium* of factuality and the *magisterium* of ethics and value. This is more likely. The exploration of factual reality, on the one hand, and the quest for ethical meaning, on the other, seem to be different domains of knowledge. Within each domain, certain modes of inquiry are suitable or more conducive to reliable conclusions. Thus, scientific reasoning is a mode of inquiry within the *magisteria* of factuality. The question of this chapter is whether we are warranted to raise a *cordon sanitaire* to leave religious traditions outside of this domain by political will. A different question is whether the modes and methods utilized in this domain

being dishonest, because the very idea of religion that they put forward is diminished: “In that philosophy, science defines the objective picture of reality for everyone; religion contributes value judgments or subjective reactions to that picture”. To Johnson, NOMA is “naturalistic metaphysics in a nutshell, and its version of *separate but equals* means about what the same phrase did in the days of Jim Crow” (2010: 195). Recall that Jim Crow was the name by which the racial segregation laws that operated in southern states of the US between 1877 and the mid-1960s were known.

⁶ According to Dawkins, “the presence or absence of a creative super intelligence is unequivocally a scientific question, even if it is not in practice -or not yet- a decided one” (2006: 82). Echoing Plantinga, Dawkins goes on to ask whether Jesus’ mother was indeed a virgin, whether Lazarus was raised from the dead and of course whether Jesus himself came alive again three days after being crucified. Regardless of the available evidence to decide them, Dawkins argues that each of them is “a strictly scientific question with a definitive answer in principle: yes, or no” (2006: 83). Victor J. Stenger recognized that NOMA is an appealing principle for those scientists who want to avoid conflicts between science and religion -because they want to lower public resistance to scientific findings and they fear less funding if they pit one against the other- but he nonetheless affirms that “most religions do more than simply moralizing but make basic pronouncements about nature, which science is free to evaluate... religions make factual claims that have no immunity from being examined under the cold light of reason and objective observation” (2007: 10). Taner Edis also denounced this temptation for political correctness: “Too many of us profess to believe science and religion are separate domains; too often we shudder to think they may have something to say about each other. Liberal theists say the fact of biological evolution has no significance for religion. Atheists say ‘Science can never lead us to God. It can’t even try’, and they concentrate on refuting the classical proofs. Neither are taking their fact claims seriously enough” (2002: 46). The philosopher of science Massimo Pigliucci argues that “there are several intrinsic reasons why NOMA does not hold water... it is not true that (most) religions do not make claims about the natural world. Besides the tens of millions of people who believe the Earth is 6,000 years old, the Bible was never meant as a book of metaphors” (1999).

are appropriate. For now, it is important to have in mind that the domain of factuality should not be identified with strict scientific means.⁷

In his last work, Ronald Dworkin provided a distinction to clarify the point. According to it, conventional theistic beliefs like Judaism, Christianity and Islam can be disaggregated into two parts: a *science* part and a *value* part. I quote him at length:

“The science part offers answers to important factual questions about the birth and history of the universe, the origin of human life, and whether or not people survive their own death. That part declares that an all-powerful and all-knowing god created the universe, judges human lives, guarantees an afterlife, and responds to prayers. Of course, I do not mean that these religions offer what we count as scientific arguments for the existence and career of their god. I mean only that this part of many religions makes claims about matters of fact and about historical and contemporary causes and effects. Some believers do defend these claims with what they take to be scientific arguments; others profess to believe them as a matter of faith or through the evidence of sacred texts. I call them all scientific in virtue of their content, not their defense” (2013: 23)

Dworkin’s nomenclature is helpful: most theistic traditions put forward claims that are sometimes called scientific *in virtue of their content*: they address matters of factual reality. This is regardless of the method for their *defense*, which can be properly scientific or otherwise. The *content* represents what we have called a domain of inquiry, while the *defense* represents what we have called the mode of inquiry. I expect to show that any strong version of NOMA that suggests that religions should keep their noses out of scientific problems -in the sense of factual problems- is irredeemably doomed. Likewise, I contend that the SCR are commonly posited as truth-propositions in the factual domain. This is not the same as saying that theism should be understood first and foremost as an explanatory enterprise, the central aim of which is to speculate about factual reality. Perhaps it is true that the authors identified with New Atheism exaggerate this line of argument. Instead, as the theologian Alister McGrath has proposed, we should abandon NOMA for a POMA solution: science and religion stand for a “partially overlapping magisteria” (2007: 19). The overlapping zone is the specific area in which both cultural projects and discursive traditions indeed compete for the

⁷ This is perhaps what the British theologian Keith Ward had in mind when he asserted that “the question of God is certainly a factual one, but certainly not a scientific one” (2008: 30).

same explanatory space, to make sense of the world we inhabit. Against Eagleton -who holds that Christianity was never meant to be an explanation of anything- McGrath rightly retorts that “this explanatory theme is part of its rich heritage” (2015: 67). Of course, there is more to theism than that. Yet, as McGrath notes, “the intellectual capaciousness of faith cannot be overlooked, especially its discernment of a deeper structure to the world which helps us grasp our own position within it and live our lives more authentically” (2015: 67).

In turn, Gould is surely right when he espouses that “science rules the magisterium of factual truth about nature” (1999: 22). Indeed, scientific reasoning rules within this domain because it has proven highly useful to the task. But this does not mean that other modes of cognition or knowledge-generator systems cannot aspire to do better. As noted by Dworkin, religious believers participate in the domain of factuality by using arguments either from faith or revelation, or even conventionally scientific ones. The creationist fauna is a case in point: while some rest on the authority of their sacred texts –like Biblical Creationism- others try to carry proper scientific arguments, such as the Intelligent Design movement.⁸ To reiterate, these are all different modes of inquiry -Dworkin’s notion of *defense*- which apply to the same domain -Dworkin’s idea of *content*.

The conceptual problem with NOMA is that it fails to see the difference between domains and modes of inquiry when it automatically conflates science with positive factual knowledge and religion with normative morals. If anything, we should adopt a distinction between a *magisterium of factuality* and a *magisterium of ethics and meaning*. Thus reframed, this functional separation remains consistent with Hume’s Law- in the sense that factual truth cannot straightforwardly dictate moral truth- but it does not compel theistic discourses to abandon factual claims. SCR are still legitimate in the realm of factuality. Whether Gould would have accepted this restatement is unclear.⁹

Instead, Gould did accept that a *magisterium of ethics and meaning* should not be monopolized by institutional religion. He acknowledged that other nonreligious philosophical outlooks -

⁸ For example, commenting on Michael Behe’s work, Thomas Nagel argues that, “this seems on the face of it to be a scientific claim, about what the evidence suggests, and one that is not self-evidently absurd” (2008: 192). Nagel is not that generous with hardline creationism, which he believes is hardly scientific.

⁹ I am inclined to believe that he would not have accepted it. Take the following passage: when presenting the legendary case of Doubting Thomas, who did not believe the news of Jesus’ resurrection until he could see and touch his wounds, Gould notes that the disciple was “espousing the key principle of science while operating within the different magisterium of faith” (1999: 16). But this cannot be right in the light of the restated NOMA: Doubting Thomas was not acting in “wrong magisterium”, as Gould suggests. He was asking a very factual question indeed: was his late Master wondering around with open sores on his hands, or not?

such as secular humanism- also compete in this terrain. This confirms how conceptually misleading it is to conflate the idea of a *magisterium* of religion with a *magisterium* of ethics and meaning. Religion is too multifaceted a phenomenon -with an important factual department- to account for (just) values and morals. In turn, the domain of value and morals largely exceeds the jurisdiction of traditional theism.

Hence, the original version of NOMA is conceptually untidy: science is not a domain but a mode of inquiry, whereas religion is a complex human experience that cannot be confined to the realm of normative ethics. Theistic traditions usually possess a cosmological narrative, a rich account of historical episodes that took place in spatiotemporal reality, and some ideas about how a supernatural force could intervene in the world in a way that is discernible to our intelligence. Theistic religions are not just moral philosophies but legitimate stakeholders in the *magisterium* of factual inquiry, and that is why they cannot be politically disqualified from the ebullient dispute over the history of life on Earth. Dworkin refers to these claims as the *scientific* side of theism. Here we have called them SCR. Both are referring to that broad domain of inquiry that covers propositional claims and assertions about factual reality.

3. The Thrust of Theological Realism

There are strong reasons why theistic traditions are involved in debates over factual reality. Correspondingly, there are strong reasons why they should care about the evidential plausibility and explanatory proficiency of some of their claims.

First, most religions cannot be divested from factual claims insofar as they aim to present a true comprehensive picture of the human experience. In this attempt, some overlap is expected with the efforts of science. Surely, a great deal of ultimate (religious) truths will not be sought in the discoveries of science. Not every truth-claim seems to be susceptible to being decided by evidential and universally-accessible means. However, it is widely accepted that the pronouncements of science correspond to some of our best cognitive wagers to represent the structure, workings and features of the real world. Thus, if the aim is to have a verisimilar idea of such a world, the powers of science can hardly be ignored. This is especially true for 'realist' theological traditions. Realism, in a nutshell, is the attempt to maximize the correlation between epistemological input and ontological belief. As the epistemic capacities of scientific reasoning to deliver accurate pictures of the perceptible world are highly and

commonly esteemed, realistic theologies are compelled to integrate them when constructing an overall truth-picture of human existence¹⁰. In other words, religious commitment might be importantly performative, but this does not mean that religious claims are not relevantly propositional. They *must* be for religious traditions interested in making sense of the whole world and not just a subset of it. Theism, as Polkinghorne observes, “is concerned with making total sense of the world... the force of its claims depends upon the degree to which belief in God affords the best explanation of the varieties, not just the religious experiences, but of all human experiences” (1998: 24). This is also true for the Catholic tradition, in which the “cosmic aspect of religion” merges and becomes one with “the existential aspect, the question of redemption” (Schönborn, 2008: 21). Again, theistic belief “cannot remain without points of contact with the concrete exploration of the world” (Schönborn 2008: 92). Hence, it is simply mistaken to take the religious phenomena -at least in its theologically realist stream- as indifferent or detached from its ancestral explanatory side. This point should help liberals to understand the depth of the CC.¹¹

Secondly, it is crucial to note that some of these factual claims are, in turn, foundational to other decisive religious beliefs, of a metaphysical or even moral character. Dissecting the intellectual backlash against the New Atheism, Phillip Kitcher distinguishes between two versions of religious allegiance: the *belief* model and the *orientation* model. While the former highlights the doctrinal foundations of religious states, the latter emphasizes a set of foundational values rather than truth-claims. Thus, New Atheists would be wrong in attacking the whole of religion as if it were only one model -the belief one. For those committed to the orientation model – “a complex of psychological states that does not include factual beliefs, and that embodies a person’s sense of what is most significant and worthwhile in his own life and the lives of others” (Kitcher, 2011a: 4)- the claims of the New Atheism fall on deaf ears. However, those critiques that are aimed specifically to the belief model are entirely pertinent, insofar these peoples believe that “they have grounds for

¹⁰ The English theoretical physicist and theologian John Polkinghorne expresses this view in eloquent terms: “Scientists, and theologians of a realist cast of mind, have one important commitment in common: they both believe that there is a truth to be found or, more realistically, to be approximated to... Yet, in both science and theology, the central question is, and remains, the question of truth” (1998: 45). In a similar tone, the legal philosopher Kent Greenawalt explains that “the separate discourses approach founders on the reality that scientists and religious believers both care about what is really true, overall” (2005: 96).

¹¹ The Episcopalian legal scholar Stephen L. Carter observed that creationist parents “are asking the school to teach the truth –not the moral truth with which religion is commonly associated in our dialogue, but a truth about the *real* world” (1994: 180). In the same vein, Greenawalt recalls that, “someone who accepts the literal truth of Genesis has a view about how life *really* developed historically that conflicts with evolutionary theory” (2005: 96) *Italics are mine.*

thinking that the doctrines they espouse are true, and in this case the dispute between them and their critics turns on matters of evidence” (Kitcher, 2011a: 7). Indeed, Christians truly believe that Jesus rose to the heavens after being crucified by the Romans. That is a factual claim intermingled with a historical reading. *If* this were to turn out to be false –or merely metaphorical- the Christian faith would be in a grave predicament. Saul of Tarsus got it right when wrote to the Greeks that “if Christ be not raised, your faith is vain; ye are yet in your sins” (1 Corinthians 15:17).¹² The same goes for other concrete spatiotemporal episodes and factual assertions that are central to most religious narratives. Devout Muslims truly believe that Mohammed existed as Allah’s messenger and ascended into Heaven on a winged horse to receive instructions about praying. Most Mormons believe that Joseph Smith translated a brand-new gospel from golden plates and was visited by God somewhere near Utah. The virginity of Mary –as a physiological state related to her sexual organs and not as a psychological state about her naivety or innocence- has been exalted as a template for moral virtue. In these cases, theological narratives are inextricably linked to a set of non-normative claims that are embraced as foundational. Theology, as Polkinghorne acknowledges, “must always seek to relate its concepts to the foundational events of its traditions” (1998: 46). In other words, concrete historical events –thus within the *magisterium* of factual truth- bear religious consequences. When these factual claims are disputed, the theological tree of knowledge is shaken. Or, as the historian Yuval Noah Harari has recently pointed out, the power of religious guidance weakens.¹³ This is risky business: part of science’s revisionist tendency is to assign degrees of plausibility to historical facts that are foundational to religious

¹² In what appears to be a contradiction to his general point, Eagleton agrees that (certain) religious claims still require evidence to be backed, and that they are not mere poetic expressions or subjective truths. The resurrection seems to be one of these cases. Paraphrasing St. Paul, Eagleton observes that, “if Jesus’ body is mingled with the dust of Palestine, Christian faith is in vain” (2009: 116).

¹³ Harari contends that the only way that religions have issued practical guidance is by conflating factual statements with ethical judgments. Without factual claims, no practical guidance is possible. Among other cases, Harari discusses abortion. Both liberals and devout Christians say that life is sacred (ethical judgment). But they disagree about a crucial biological fact: when does the human life begin? (factual contention). Thus, the ethical judgment alone does not provide a normative instruction. Sometimes we are stuck at the factual level. Harari acknowledges that science has no authority to refute or corroborate the ethical judgments religions make, “but science do have a lot to say about religious factual statements” (2016: 190). To prove the point from an historical perspective, Harari raises the case of the Donation of Constantine, according to which the roman emperor Constantine signed an official decree granting the Popes perpetual control over the Western Roman Empire. For a thousand years, the Catholic Church refer to this document to ground its right to political rule. The practical guideline – ‘all Europeans ought to obey the Pope’- was the result of conflating an ethical judgment – ‘people ought to respect ancient decrees’- with a factual statement – ‘on 315 BC, Constantine issued a decree granting the popes dominion over Europe’. While science has little to say about whether people ought to respect ancient decrees, it has a lot to say about the veracity of the factual statement. Indeed, researchers discovered that the Donation of Constantine was forged in the papal court sometime in the 8th century. Consequently, the practical guidance collapse.

discourses.¹⁴ Of course, some theological claims -even if they are stated in a propositional fashion- are certainly difficult to assess.¹⁵ Other typically religious claims remain in a grey area, at least until we have new insights and ways to approach them. For instance, the official Catholic doctrine has accepted the main theme of Darwinism but insists that the spiritual soul was created directly from God at some point in our evolutionary history. Given the methodological constraints, scientists might not have the intellectual tools to prove whether the latter claim is true or false. But it is still a factual proposition that is constitutive of the Christian faith. In principle, it could be factually true as it could be factually false. If it turns out to be false, it is bad news for Catholicism. Thus, the Church has a reasonably vested interest in the favorable resolution of this kind of claims.¹⁶

In sum, theistic narratives cannot afford to be aprioristically silent on these matters to the extent that they touch on questions relevant to their faith. If their factual foundations can be weakened by scientific insights, the religious discourse remains fragile. I do not dispute that religiosity is indeed a way of life rather than a set of intellectual ideas, but, as Ian Barbour acutely notes, “a way of life presupposes beliefs about the nature of reality and cannot be sustained if those beliefs are no longer credible” (2000: 37). Even the most basic theistic

¹⁴ Jerry Coyne asserts that, “many of the truths once revealed by the Abrahamic faiths have been disproved by science: these include special creation, the Adam and Eve Story, and the Great Flood” (2012: 2656). The same goes for many of the historical events and factual claims that ground certain theistic beliefs, which have been rendered much less plausible in the light of modern science, like “the existence of virgin births, bodily resurrections, a soul separate from the brain and body, and so on” (Coyne, 2012: 2656).

¹⁵ This is the most that Falcioni is willing to concede in his argument: “Even taken in a propositional way, what evidence could one offer for the claim that Jesus died for the sins of the world, that Muhammad is the seal of the prophets, or that God is love? These beliefs are at the core of their respective traditions and yet they do not seem to be amenable to scientific or even broadly evidential investigation” (2010: 220). But here Falcioni seems to be confused. First, he includes all fact-sensitive theological claims in the same bag, but evidence of Jesus dying *for* our sins (a statement about his intentions) is certainly different from evidence about him coming back from the dead (a factual statement). Second, the practical difficulties of assembling an evidential case do not amount to the principled impossibility of such a task. More of this in the following chapters.

¹⁶ The idea that religion has a vested interest in scientific discoveries was made clear by Pope Pius XII in his encyclical *Humani Generis*: “It remains for Us now to speak about those questions which, although they pertain to the positive sciences, are nevertheless more or less connected with the truths of the Christian faith. In fact, not a few insistently demand that the Catholic religion take these sciences into account as much as possible. This certainly would be praiseworthy in the case of clearly proved facts; but caution must be used when there is rather question of hypotheses, having some sort of scientific foundation, in which the doctrine contained in Sacred Scripture or in Tradition is involved. If such conjectural opinions are directly or indirectly opposed to the doctrine revealed by God, then the demand that they be recognized can in no way be admitted” (1950). Fair enough. But what IF they turn out to be *proven facts* and not just *conjectural opinions*? Would the Catholic Church accept a well-supported scientific conclusion stating that there is nothing like the soul? Actually, the life sciences have already ditched anything like the soul, which existence cannot be squared with Darwinian evolution. “This terrifies large numbers of people”, Harari notes, “who prefer to reject the theory of evolution rather than give up their souls” (2016: 105).

proposition -*God exists*- is stated with the intention of implying a factual reality, regardless of the level at which such a reality is manifested. If such a god does not exist *in reality* -but only as an expression of our dearest moral convictions and desire to live decent lives- much of the appeal of traditional theism is lost beyond repair.¹⁷

Third, the pervasiveness of religious realism relates to the long tradition of natural theology. The latter is the project that aims to prove the existence and attributes of God through the observation of nature by purely rational means. The argument from design is perhaps its most paradigmatic expression. It states that the traces of divine intention are imprinted in the world surround us. Despite Hume and Darwin, the argument from design enjoys good health among the general theistic population, and the basic intuitions underlying natural theology are being continuously endorsed by theologians and philosophers of religion¹⁸. Take the influential work of Richard Swinburne, who has made a career arguing that the evidence of order in the world increases the probability of theistic hypotheses. As he puts it, “on our total evidence, theism is more probable than not” (Swinburne, 1979: 291). Here, Swinburne is not far from Dawkins, in the sense that both believe that questions about God’s existence, agency and properties are ultimately questions about the truth of factual propositions, which are open to rational investigation. Philosophers like Swinburne have received important support. From Freeman Dyson to Francis Collins, from physics to genetics, renowned scientists have offered their reasons to believe that nature speaks loudly about a super-intelligent creator. In cosmology, for instance, the Anthropic Principle would suggest that the universe is fine-tuned for the appearance of human life. In quantum physics, the Indeterminacy Principle has been interpreted as a way in which God acts to actualize a given potentiality from a range of possibilities. The case of biological design is just another expression of the view that natural science could eventually confirm theism. As Michael Behe

¹⁷ As Polkinghorne declares regarding the Christian faith, “a God who is just an internalized symbol of our commitment to the highest values may provide a focus for living but such a God is not the ground of hope in the face of death and beyond death. Unless there really is a God who really *was in Christ reconciling the world to himself*, then the cross is no answer to the bitter problem of the suffering of the world” (1998: 45). In the same sense, Phillip Johnson argues that, “a supposed command of God can hardly provide a basis for morality unless God really exists” (2010: 195).

¹⁸ Even Falcioni acknowledges that the New Atheist movement might fail to do justice to religious belief, but it is not outside of the philosophical and theological tradition. As he recognizes, “much of the academic philosophy of religion actually supports the view of religious belief –as hypotheses standing in need of evidence– offered by the new atheists” (Falcioni, 2011: 204). Thus, the view that religious claims are susceptible to scientific scrutiny is far from marginal.

summarizes, their cognitive feeling is that “materialism has a tough time with a universe that reeks of design” (1998).

Some of these arguments are not offered in the classical spirit of natural theology, but in a reformulation that goes by the name of ‘theology of nature’. While natural theology aims to show evidence of God’s deeds in the perceptible universe, a theology of nature starts from theistic assumptions and tries to make sense of scientific discoveries in the light of those assumptions. Despite their differences, both approaches reject the idea that theistic religions lack an explanatory side. They would also disagree with the notion of a confined-to-values theism. Furthermore, they are willing to challenge materialistic understandings of the universe in the hope that scientific research and reflection will confirm the rational plausibility of God’s providential intervention.¹⁹

Having said all that, the internal richness of theism allows room for non-realistic religiosity as well. Following the teachings of Karl Barth, some theologians reject the view that the natural order can give us any meaningful insights into the glory of God. According to the Barthians, the problem with natural theology is that it adopts the ‘standpoint of unbelief’: one must wait until the evidence is clear to resolve whether a religious claim is warranted. In a sense, it might be said that this kind of theology wants to avoid what John Dewey saw as an inevitable trend: if religion sticks to supernatural hypotheses to account for natural phenomena, its reputation will be impoverished insofar as increasingly educated people will

¹⁹ Swinburne is unequivocal on this point: “Scientists, historians, and detectives observe data and proceed thence to some theory about what best explains the occurrence of these data... Using the same criteria, we find that the view that there is a God explains *everything* we observe, not just some narrow range of data. It explains the fact that there is a universe at all, that scientific laws operate within it, that it contains conscious animals and humans with very complex intricately organized bodies... The very same criteria which scientists use to reach their own theories lead us to move beyond those theories to a creator God who sustains everything in existence” (1996: 2). Within the Catholic curia, Schönborn has remarked that, “the observation of nature, the investigation of the universe, of the earth, of life speaks to us with overwhelming evidence of order, plan, fine-tuning, intention and purpose” (2008: 95). From a Protestant perspective, Koons has expressed the bold conviction that “the new knowledge we have acquired recently, including evidence for the Big Bang, anthropic coincidences, the fantastic complexity and functionality of biological systems, and the deepening intractability of naturalistic explanations for the origin of life and consciousness, support theism” (2003: 73). An explicit advocacy of the scientific proficiency of theistic hypotheses has been articulated by the ID theorist Stephen C. Meyer. To Meyer’s eyes, “it is not only cosmology that has rendered the God hypothesis respectable again. As one surveys several classes of evidence from the natural sciences -cosmology, physics, biochemistry, and molecular biology- theism emerges as a worldview with extraordinary explanatory scope and power” (1999: 27). McGrath has recognized that, in some respects, science has eroded the plausibility of certain religious claims. But in other respects, he thinks, the opposite is true. For instance, “the standard cosmological model resonates with a Christian narrative of creation, much to the annoyance of atheists...” (McGrath, 2015: 73).

feel driven away from it.²⁰ But there is another reading. The theological school of anti-realism has been associated with an approach known as neo-Orthodoxy. Its advocates claim that propositional truths are irrelevant because they are informative but not transformative enough. Thus, neo-Orthodoxy maintains, the only important aspect of religious life is the subjective experience of the individual.²¹ This theological view is indeed consistent with NOMA and with the idea that religious claims are of such a special kind that scientific investigation of them is nonsense. It is also consistent with the orientation model of religiosity, as opposed to a rather doctrinal one. It is consistent too with Falcioni's and Eagleton's view of religious faith as a non-cognitivist or non-intellectualist phenomenon. In a nutshell, for theological antirealism there is no such thing as SCR.

Nonetheless, the crucial question for us is whether political institutions are warranted to rule in favor of theological antirealism to the detriment of realistic perspectives when it comes to characterizing religion in the public sphere. This is problematic for at least two reasons. First, as Winnifred Fallers Sullivan (2005) forcefully argued, the task of defining religion for legal purposes could prove insurmountable, to the extent that everyone has different ideas about what religion *really* is. As she recalls, the idea of religious freedom was once understood as a guarantee of tolerance. That noble purpose would be defeated if we were to use the political muscle to restrict what religious belief should amount to. Secondly, because most theistic believers -paraphrasing Polkinghorne- are of a "realist cast of mind". Applying the same Wittgensteinian formula, this work suggests that religion still plays an explanatory role in many places.²² As I have mentioned earlier, the argument from design is still very popular.

²⁰ According to Dewey, "some views about the origin and constitution of the world and man, some views about the course of human history and personages and incidents in that history, have become so interwoven with religion as to be identified with it. On the other hand, the growth of knowledge and of its methods and tests has been such as to make acceptance of these beliefs increasingly onerous and even impossible for large numbers of cultivated men and women" (1934: 30).

²¹ The anti-realist theology of the philosopher and former Anglican priest Don Cupitt is a sample of this view. Cupitt believes that there is little point in theism continuing to fight in the factual domain, and trying to introduce supernatural hypotheses into the picture. Instead, Cupitt thinks that the future of religion should begin by recognizing that "the whole cosmological or grand narrative side of religion has totally collapsed... that there is no rationally ordered scheme of things out there, no grand narrative meaning-of-life already laid on for our lives to be fitted into. We know, if we know anything, that there isn't literally any supernatural order, and there is not literally any life after death" (1997: 103). In other words, Cupitt is saying that theistic religion should abdicate to the *science* part altogether: "I am suggesting that what we should pick out as valuable and try to salvage will be certain forms and practices of selfhood, certain modes of conscience and ways of expressing oneself in one's life. In the future we will see our religion not as supernatural doctrine but as an experiment in selfhood" (1997: 82).

²² As Steven Weinberg once remarked about Gould's NOMA, "the meaning of religion is defined by what people actually believe, and the great majority of the world's religious people would be surprised to learn that religion has nothing to do with factual reality" (1992: 191).

In fact, as some research has shown, ordinary believers and nonbelievers see theism and science as offering competing answers and explanations for many of the same phenomena, to the extent that those phenomena are relevant to people's understanding of their place in the world. Such a competition for explanatory space can sometimes trigger social and political conflict as in the case of the origin and history of life. Sadly, for liberal diplomacy, this might be a zero-sum game.²³

In conclusion, there is no way around the fact that too many people still see religion as propositional about the real world. Or, if you prefer, many people derive their beliefs from religious doctrines in which factual claims are constitutive and even foundational. The recognition of this psychosocial feature does not mean that political institutions must interpret religion along the exclusive lines of theological realism or the belief model because it looks majoritarian. What it does mean is that political institutions cannot rule out the legitimate interest of religious believers in the domain of factual reality.

4. Science's Imperialistic Ambitions

The final blow to the NOMA solution is given by the fact that the scientific impetus can hardly be contained in a subset of human knowledge. As mentioned above, scientists also care about the truth, overall. So, they aspire to explain increasingly more vast territories. It is one thing to acknowledge the fact - value distinction and that *is* does not imply *ought*. But it is quite different to hold that science, as a mode of inquiry, should be silent on religious and moral debates. The only philosophical restriction that science imposes on itself is avoiding "the simple-minded attempt to rush from facts to values" (Dennett, 1995: 468). Beyond that basic rule, science possesses the epistemological potential to theorize into different dimensions such as religion, morality, meaning and value-talk.

²³ That is the conclusion at which psychologists Jesse Preston and Nicholas Epley have arrived: "Conflict between science and religion over this prime explanatory space may create a negative association between the two, such that the value of one may be inversely related to the automatic evaluations of the other. Enhancing the apparent explanatory power of scientific explanations may automatically decrease positive evaluations of religion, and vice versa. Likewise, apparent weakness in scientific explanations may increase positive evaluations of religion, and vice versa... Advances in scientific theories that contradict religious explanations can threaten these beliefs and are often met with resistance. Conversely, when scientific explanations are poor, the value of religious explanations may be enhanced" (2009: 240).

On religion, diverse scientific disciplines have come together to provide a natural understanding of religiosity as an entirely natural phenomenon. Combining anthropological insights, biological facts and sociological reflection, this line of research has been highly fruitful in recent times.²⁴ This academic tendency seems to have been anticipated by Émile Durkheim, who wrote in 1912 that, “science will become master even in the protected realm [of religion]” (2001: 325), and later countersigned by E. O. Wilson, who famously argued that, “we have come to the crucial stage in the history of biology when religion itself is subject to the explanations of the natural sciences” (1978: 192). Some religious people resent this secular attempt to explain religion away as a purely cognitive adaptation, as if it washes away the divine mystery. But others have assessed this development in a brighter light.²⁵

On morality, the natural sciences -especially evolutionary biology and evolutionary psychology- have claimed the right to posit hypotheses regarding the origins of our moral sense and feelings. Since W.D. Hamilton’s pioneering work, scientists have entered a field that was historically associated with religion and philosophy. Now, they also aim to answer why we think that some behaviors are ethically good and others are evil. As we reviewed in the previous chapter, contemporary science increasingly understands morality not as an external divine endowment but as a grand evolutionary adaptation that we share with other animals.²⁶ Suddenly, our moral attitudes are framed in terms of ‘selfish genes’, ‘kin selection’ and ‘cultural memes’, among other notions that have been popularized within the last decades.

Then, according to NOMA, science is not able to provide answers to questions about ultimate meaning. As is usually described, the scientific quest is always about the *how* and never about any substantial *why*. From Leibnitz to Hans Kuhn, philosophers and theologians

²⁴ See Pascal Boyer’s *Religion Explained: The Evolutionary Origins of Religious Thought* (2001), Scott Atran’s *In Gods We Trust: The Evolutionary Landscape of Religion* (2002), David Sloan Wilson’s *Darwin’s Cathedral: Evolution, Religion and The Nature of Society* (2002), Daniel Dennett’s *Breaking the Spell: Religion as a Natural Phenomenon* (2006), Dominic Johnson’s *God Is Watching You: How the Fear of God Makes Us Human* (2015), among others.

²⁵ Drawing on Boyer’s and Atran’s work, the philosopher of science Barbara Forrest has concluded that religious beliefs -and the pseudosciences that are often associated with them- are not marks of stupidity. On the contrary, “cognitive science indicates that both are products of evolved intelligence, reflecting a natural, imaginative curiosity about what lies beyond the horizon of experience and an ability to envision alternative possibilities” (2013: 278). In the same vein, Alister McGrath agrees that, “there is now a growing consensus that religion is best understood as a natural phenomenon, a cognitively natural human activity which arises through -not in spite of- natural ways of thinking” (2015: 124). Therefore, not all efforts to understand religiosity under a scientific lens need to be interpreted as intellectualistic blows against religion. They just add more proof that the two *magisteria* cannot be forcefully separated.

²⁶ Experiments on the moral sense of higher apes are well-known thanks to the work of primatologists such as Frans De Waal and Isabel Behncke.

have claimed that religious reflection is the proper way to address the question of *why there is something rather than nothing*. Condensing this thought, Eagleton asserts that the difference between science and theology “is one over whether you see the world as a gift or not; and you cannot resolve this just by inspecting the thing, any more than you can deduce from examining a porcelain vase that it is a wedding present” (2009: 37). However, modern cosmological theories have advanced a series of hypotheses not only about *how* the universe came to be, but also about *why there’s something rather than nothing*. Put it in some way, at this point in contemporary knowledge, science might say a word or two about how *likely* Eagleton’s porcelain vase is to be a wedding present.²⁷

On values, some areas of science have a good deal of intellectual resources to explain why we value some things and disvalue others. This has an obvious relation with utilitarian ethics: happiness and suffering, pleasure and pain, can be roughly measured with instruments provided by natural sciences. Take the following example: whenever a religious congregation commands conversion therapies for their gay flock -because homosexuality is deemed as sinful- the reply comes from humanist philosophies as well as from neuroscientific quarters. The latter teach that homosexuality is not a disease that is likely to be cured but most likely a genetic condition, and that those false remedies only bring more suffering. Even here, the concept of suffering is related to specific states of the conscious brain, states that can be discussed scientifically. In the sense that it dares to invade previously forbidden camps of knowledge, the field of neuroscience is full of imperialistic hypotheses.²⁸

²⁷ Two recent prospects in the field are Stephen Hawking & Leonard Mlodinow’s *The Grand Design: New Answers to the Ultimate Questions of Life* (2010) and Lawrence Krauss’s *A Universe from Nothing: Why There Is Something Rather than Nothing* (2012). For Krauss, the reason why there is a universe rather than nothing at all is because nothingness -in terms of empty space- is ultimately unstable. Such a physical feature is the *why* and the *how* at the very same time. Notwithstanding this, Krauss acknowledges that science is not interested in the purposeful dimension of the *why* question. Criticizing Krauss, McGrath argues that “the scientific narrative does not possess a methodology which allows it to answer that *why* question, which would require access to whatever existed before the big bang. And at the moment, that is simply inconceivable” (2015: 87). It seems a misguided reply, insofar as it links the *why* question to further factual knowledge about the universe. Such a knowledge is currently unavailable but it might be -in principle- attainable.

²⁸ The work of the philosopher and neuroscientist Sam Harris is provoking in this respect. Alluding tacitly to NOMA, Harris recalls that, “the underlying claim is that while science is the best authority on the workings of the physical universe, religion is the best authority on meaning, values, morality, and the good life”. But he goes on to assert that, “this is not only untrue; it could not possibly be true. Meaning, values, morality and the good life must relate to facts about the well-being of conscious creatures –and in our case, must lawfully depend upon events in the world and upon states of the human brain” (Harris. 2010: 17). To my mind, the problem with Harris’ claim -the idea that morals can be entirely grounded on scientific assessments of conscious wellbeing- is that the philosophical assumption of such an exercise is already utilitarian. This does not mean that he is wrong -especially if you have utilitarian sympathies. It simply means that he is not deriving his ethics

These are just examples. The aim of this section was not to provide an exhaustive list of all cases in which science steps into traditional religious ground. Instead, the objective was to highlight that NOMA is an unsustainable principle not only because theism is actively bidding in the *magisteria* of science, but also because science is increasingly interested in describing and explaining phenomena that -in Gould's original formulation- should belong to the *magisteria* of religion.

Summary

We opened this chapter by interrogating whether political liberalism could legitimately reject the educational claim made by creationists -say, to introduce their theories along with Darwinism in the biology curriculum- by resorting to a normative account in which religion remains outside the scientific field. I have presented S. J. Gould's NOMA principle as a paradigmatic example of how such an account might work. According to this "ecumenical détente", as Dennett calls it (2011: 49), science and religion constitute two entirely different teaching domains: while the former attempts to explain the workings and internal features of the universe, the latter deals with morality, meaning and values. Correspondingly, talking about SCR as propositional hypotheses that can be confirmed or discredited by means of rational evidence is utterly misplaced. Religion is not about that, the argument goes, and that is the main reason why the New Atheists get it so wrong in their attack against it.

However, most theistic traditions are closely associated with factual claims about the real world, the wonders of the universe and even local events in human history. This is what Dworkin called the *science* part of religion, to convey the idea of a capacious domain of inquiry rather than a specific set of methodological tools of research and investigation. It does not seem possible to disentangle theistic belief from its legitimate explanatory ambitions in the realm of factual reality. Religion simply cannot be confined to the sphere of morals and sentimental meaning.

To begin with, comprehensive theistic narratives care about what is true, overall, and not just about a spiritual subset of human experience. Then, several theological assertions are built into specific facts of real life, which are amenable to scientific investigation. Hence, theistic traditions are by no means indifferent to the outcome of such a programme. Finally, the view

from scientific facts, but that he is especially valuing those facts because they fit into a prior philosophical framework.

that religion issues truth-propositions about factual phenomena in a non-metaphysical sense is far from marginal. At a scholarly level, this is representative of the school of theological realism and the long-standing tradition of natural theology. These hold that theistic beliefs are in good shape to gather evidential support. At an ordinary level, it is possible to observe that although most believers see their religion as a way of life rather than as a set of scientific conclusions, many of them also think about their religious traditions as incorporating accurate representations of the world. This is because an accurate cosmic representation helps them to discern the intellectual love of God for his creatures. Even if an important number of believers do embrace a sort of theological anti-realism, it would be unwise for political purposes to restrict religion to such a narrow interpretation.

Finally, we have shown how certain areas that are historically linked with the *magisterium* of religion can -and perhaps should- be terrain for scientific assessment. At different levels, the natural and social sciences have joined forces to describe and explain discourses on religion, morals, meanings and values. In the same way that theistic traditions have something relevant to say in the domain of factuality, science has something to contribute towards a better understanding of certain phenomena that are usually located within Gould's *magisteria* of religion.

Therefore, NOMA does not work for either side. It is not a philosophically sustainable principle but, most importantly for us, it cannot be the basis for a political resolution to the CC. Liberals tend to admire the conciliatory spirit of Gould's proposal, but they cannot adopt it as normative guidance. It would imply a rather authoritarian and discriminatory settlement against conventional (realist) understandings of religion. As it is implausible to divest all religious beliefs from factual claims, theistic discourses can legitimately reclaim their right to apply for factual explanations.

IV

Liberalism and the Purview of Science

A response to the Methodological Naturalism Objection

The previous chapter described an attempt to create a wall of separation between science and religion by confining the latter to the role of a human ethical system, able to provide coordinates of value and meaning but deprived of contact points with the realm of truth-propositions about factual reality. In this chapter, we will dissect a different but related objection to SCR, and to CC in particular. Instead of imposing boundaries on the *magisteria* of religion, it aims to demarcate science in such a way that no supernaturalistic hypotheses could ever be posited as potential explanations. This time is not about the limitations of religion itself –which might continue to provide alternative readings of factual phenomena within theological reflection- but about the features inherent to the scientific project. As many liberals rightly intuit that theistic traditions cannot be uprooted from their factual narratives –at least without being too intrusive in theological affairs- they pursue a different arrangement. Since science is mainly conceived as a secular endeavour –often funded with public money- it seems to them less problematic to draw the contours of its legitimate operation rather than those of religion.¹ From this standpoint, insofar as science falls within the jurisdiction of political institutions –as in the case of the science mandatory curriculum-, these are warranted to set demarcation criteria. In a way, this strategy –to which I will refer as the Methodological Naturalism (MN) Objection- reveals a refinement of NOMA, weeding out its untenable claims but keeping its separationist core.²

¹ The theologian and Christian philosopher Nancey Murphy has articulated this “liberal” feeling. She argues that it is unlikely that science will admit theistic explanations of natural and physical phenomena sometime soon for a “practical reason”, which is “the fact that much of the funding for scientific research in this country comes from the federal government. The mixing of science and religion would raise issues of separation of church and state” (2001: 465).

² The idea that supernatural claims should be excluded from the purview of scientific investigation can be presented as an extension of NOMA. Indeed, the two theses appear to be conflated in the treatment that the most scientific associations give to the subject. Take the following statement by the US National Academy of Sciences: “Science and religion are based on different aspects of human experience. In science, explanations must be based on evidence drawn from examining the natural world... Religious faith, in contrast, does not depend only on empirical evidence, is not necessarily modified in the face of conflicting evidence, and typically involves supernatural forces or entities. Because they are not a part of nature, supernatural entities cannot be investigated by science. In this sense, science and religion are separate and address aspects of human understanding in different ways” (2008: 12). But not all think that NOMA and MN stand for the same idea.

More importantly to our research, the MN strategy aims to defeat the claim that political liberalism does not live up to its promise of metaphysical neutrality when it excludes creationist views from the science curriculum. If proper science is operationally silent on supernatural hypotheses and it cannot do otherwise without ceasing to be proper science, then CC is surely misplaced. In the next few pages, I expect to show that this strategy –like NOMA- finally fails. Section 2 will present what I take to be the standard liberal reply from philosophers of science and political theorists alike: that science is not metaphysically naturalistic, but only methodologically so. Section 3 deploys a web of arguments that –taken together- weaken the argument for MN. They point out that demarcation theories in philosophy of science are still controversial, and it is unlikely that political institutions could legitimately settle this debate. Section 4 presents Thomas Nagel’s counter-objection to MN from the standpoint of liberal neutrality. I follow Nagel in arguing that any *a priori* exclusion of creationist views from the purview of science by philosophical dictum indirectly violates the liberal commitment to comprehensive impartiality. Therefore, I conclude, if we are to find reasons to keep creationism out of the classroom, they should not be articulated through the invocation of MN, but along different lines. But before, section 1 will restate the epistemic leg of the CC.

1. The Epistemic Creationist Claim.

We observed that the CC can be disaggregated into two parts. On the one hand, it expresses the conviction that neo-Darwinism is philosophically naturalistic: it stands for a view about the character of the world that is self-sufficiently materialistic and ignores the role of a creative God. This is the charge that we reviewed in chapter II. On the other hand, it rejects the thesis that the supernatural lies beyond our observational capacities, a thesis in which many scientists seek refuge to avoid a metaphysical pronouncement. Here, creationists hold that educative institutions are facilitating a naturalistic worldview by teaching their pupils that

Alistair McGrath rejects NOMA while endorsing a principled version of MN. Regarding NOMA, he thinks it is “one of the less welcome outcomes of the conflict narrative [because it] treats science and religion as hermetically sealed compartments that never interact with each other” (2015: 18). However, McGrath praises those practitioners of natural science who “wisely avoid metaphysical speculation as a matter of principle... The kind of methodological naturalism which is intrinsic to the theory and practice of science concerns how reality is to be investigated and does not predetermine either the form or extent of that reality. This naturalism is a premise of the scientific method, not its conclusion” (2015: 161). I will come back in chapter V to the problem of naturalism as either a premise or a conclusion of science.

even if the god of theism is acting throughout nature, the mechanisms of science are simply unable to trace such creative intervention. In the eyes of the creationist, science is epistemically biased against supernaturalism, and thus biased against the type of theism to which a participating god is crucial. As a result, it cannot but bring about a naturalistic theory about the origins and development of life. In a nutshell, creationists argue that the epistemic conditions of the project -what is to be judged as accurate factual knowledge- will determine the metaphysical conclusions -in this case, the implausibility of supernatural action.

It is important to understand how the two legs of the CC interplay. After all, what creationists want is to have their views included in the science curriculum. That could be achieved either by highlighting the controversial character of comprehensive Darwinism -and thus demanding a theistic hypothesis to be discussed in parallel as a way of balance- or by pointing to the structural unfairness of an epistemic project that leaves supernaturalism aside -and thus requiring a broader understanding of science, one that can consider non-naturalistic hypotheses. If none of these demands are met, creationists conclude that political liberalism is hopelessly betraying its own rules.

As we have already shown, most theistic traditions put forward factual claims. These truth-propositions, aimed at describing or explaining reality, can be defended by resorting to different methods of inquiry. Some will appeal to revelation or sacred texts. Others, instead, will insist on relying on human reason through sensory inputs. The latter will devise scientific arguments, broadly speaking. They will not renounce to science because they are fully aware of the cultural place that scientific methods and conclusions have in modern technological societies. In our times, there is a wide tacit agreement about the proficiency of science to advance reliable knowledge about the universe we inhabit. In other words, these believers are conscious of the influence that scientific instruction exerts over most children and youngsters' minds³. For the student who pays attention to the science teacher, evolutionary theory is not just a theory that the student can freely decide to take or leave. It is rather, as

³ As the theologian Alister McGrath suggests, "science provides us with excellent grounds for believing that certain things are true" (2015: 54). In Mary Midgley's terms, "since the word *scientific* remains a title of honor, the idea that there is something wrong when (say) anthropology or psychology fails to look like physicist is still influential" (2002: 28). George Levine has noted that "science has become the most powerfully authoritative language of modernity. Show that an idea is scientific, dress up an actor like a doctor in a television ad, and your claims carry weight" (2006: 5). As the philosopher Susan Haack concludes, "Scientific has become an all-purpose term of epistemic praise, meaning *strong, reliable, good*. No wonder, then, that psychologists and sociologists and economists are so zealous in insisting to their right to the title" (2007: 18).

Phillip Johnson has dubbed it, “the official creation story of modern culture” (2010: 192). If we are indeed immersed in a cultural war, and the power to fill in the factual narrative is “the power to govern the mind” (Johnson, 2010: 195), then no strategy of retreat seems culturally advisable from the standpoint of theological realism⁴. This might sound too bellicose, but it is hard to conceal that the legal faculty to disseminate trustworthy knowledge within the *magisterium* of factuality via mandatory education has implications in shaping the way that future generations will think. If science is so culturally respectable, and -as it is claimed- it is always biased against supernaturalism, then the whole set of supernatural claims of theism becomes disreputable.

Such is the problem with a mode of inquiry that is naturalistic in its epistemic structure. It is not only that neo-Darwinism is philosophically naturalistic, as the substantive CC affirms. It is that non-naturalistic possibilities are not being even considered in the competition for the best scientific explanation. As the Catholic philosopher Francis J. Beckwith has articulated, the creationist argument is not directed against evolutionary theory *per se*, but against the alleged governmental intention of using the scientific curriculum to inculcate children with “an exclusively materialist account of what counts as knowledge” (2005: 451). The implication, Beckwith observes, is a message to religious citizens in the sense that they “can never have epistemic warrant for the theological beliefs that may serve as defeaters to the deliverances of the materialistic science they are being taught at school” (2005: 451). When it comes to factual knowledge, then, it seems that science trumps all. But if science does not take SCR seriously -because they suggest supernatural hypotheses- how can theistic factual narratives be passed on to the next generations? The creationist argument boils down to the claim that science is mainly atheistic. In other words, science itself is not neutral in the relevant sense because it is ultimately committed to a naturalistic view of the world.⁵

⁴ Robert Koons makes a powerful plea against the “strategic retreat” to which theologians appear to have been forced into, “surrendering ever-greater swaths of territory to the materialistic as reductionist science brings more and more phenomena under its sway, rendering God more and more an extravagant hypothesis for which we have no need” (2003: 77).

⁵ As proof of their claim, creationists are keen to quote the prominent evolutionary biologist Richard Lewontin: “We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfil many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door” (1997).

2. **Metaphysical vs. Methodological Naturalism.**

In December 2005, in the landmark *Kitzmiller v. Dover Area School Board* trial, a US court in Pennsylvania ruled that ID creationism should not be allowed into the science classroom in public schools, not even in the minimal form of reading a statement of awareness of the existence of non-naturalistic alternatives to Darwin's theory. The fundamental reason given by Judge John E. Jones was straightforward: ID was patently a religiously-motivated thesis and as such it was impermissible to introduce it into the public education frame without violating the Establishment Clause of the US Constitution, which states that 'Congress shall make no law respecting an establishment of religion'. The Court also claimed that insofar as ID proponents were suggesting that supernatural action might account for evolutionary change, their efforts were entirely beyond the conventional and definitional scope of science.

The court's ruling in *Kitzmiller v. Dover* is one of the latest milestones in a long dispute between advocates of mainstream Darwinism and defenders of creationist readings regarding the origins of biodiversity. As described in the introductory chapter, the ID movement has attempted to gain respectability by departing from scriptural literalism, targeting the scientific gaps and supposed flaws in the logic of natural selection. Although ID implies a degree of top-down teleological causation, it does not assert –at least not explicitly- that this sort of intervention should necessarily be identified with the Abrahamic God. However, in the Court's assessment, the ID movement was nothing but the progeny of scriptural creationism, a smart re-labelling for legal purposes but ultimately a reflection of the same phenomenon. As such, Jones concluded, it deserved to be legally treated as religious beliefs in disguise.

Whether ID –or any other putatively religiously-driven theory- can pass the US constitutional test is not of interest to us here. Indeed, I believe that one of the problems in this debate is that it has been monopolized by US legal scholars who place all their hopes on winning their cases by showing that a given theory deserves to be qualified as religious, or not. As the Establishment Cause is a fixed benchmark that always repels religious teaching in secular institutions, all these theorists should do is persuade the reader that the proposed alternatives to Darwinism -such as ID- are essentially part of a religious system of beliefs, or not. This is the tone of the exchange between Francis Beckwith (2003, 2005) and Jay D. Wexler (2006). While the former dedicates most of his argument to showing that ID is not a religion but an

isolated teaching -and therefore it merits being considered for the science classroom- the latter focuses most of his reply on showing that ID is religion and not an isolated teaching - and therefore it should be automatically expelled from public education. As I am attempting to articulate a theory that is not entirely context-sensitive but applicable to different constitutional liberal orders, the limitations set by the US Establishment Cause do not affect this research. My claim is that liberal political theorists outside the US should not constrain their analytic apparatus to this interesting but narrow legal debate. This research is about the fairness or unfairness of excluding SCR in general and CC in particular from scientific education according to allegedly universal liberal principles. Therefore, the argument that I want to address is whether factual claims that imply a degree of supernatural agency should be banished from the scientific venture *in principle*.

This position seems to be largely accepted by the scientific community. To the creationists' charge that science is favouring a purely materialistic understanding of reality through the deliberate exclusion of supernatural hypotheses, most scientific organizations reply that science cannot do otherwise but leave the gods outside the door. Philosophers of science such as Michael Ruse and Robert Pennock –both active expert witnesses in trials against the inclusion of ID in science textbooks- have insisted that this exclusionary commitment does not mean that science is metaphysically biased towards atheism, as creationists fear. They distinguish between a strong version of naturalism –the kind of metaphysical naturalism that asserts that there are not disembodied entities wandering around and thus every phenomenon can be accounted for by physical, chemical and biological processes- and the more modest type of naturalism that is mainly conceived as a methodological rule. Only the former represents “a materialistic, atheistic view, for it argues that the world is as we see it and that there is nothing more” while the latter constitutes “the working philosophy of the scientist [which] is in no sense atheistic as such” (Ruse, 2001b: 365). In turn, Pennock argues that there is a gulf in meaning between what he calls Ontological Naturalism and MN. While the former “makes a commitment to substantive claims about what exists in nature, and then adds a closure clause stating *and that is all there is*”, the practitioner of MN “does not make a commitment directly to a picture of what exists in the world, but rather to a set of methods as a reliable way to find out about the world and indirectly to what those methods discover” (Pennock, 1996: 549). Therefore, MN is in no sense committed to the denial of theism. MN simply avoids theological references because “science has no place for talk of God” (Ruse, 2001b: 365). Science, accordingly, is not talking *against* God because it is not talking about God *at all*.

This is the crux of the issue: to this version of MN, scientific inquiry should remain silent on the page of supernatural participation *on principle*. Perhaps, indeed, divine forces have been intervening throughout cosmic history. Judge Jones even admitted that ID might well be true, but as it is suggesting non-natural agency, it is not science. End of the discussion. It would belong to the realm of theology or philosophy. Aligned with Judge Jones' interpretation, this view holds to the assumption that the term 'science' should never be used "for activities that go beyond the bounds of methodological naturalism" (Ruse, 2001b: 372).

Upholding the legal exclusion of ID creationism from the science curriculum, a respectable number of liberal political theorists have endorsed the premise that non-naturalistic hypotheses are beyond the normative scope of science. In her work on liberty of conscience, Martha Nussbaum affirmed that any observer "would understand that ID introduces supernatural causation, and is thus outside the realm of science as science has been understood for centuries" (2008: 325). In turn, Kent Greenawalt has rejected the introduction of creationist alternatives to evolutionary theory by arguing that modern science deals with "physical events [that] have natural causes and can be explained according to uniform laws that need not refer to anything supernatural" (2005: 97). Acknowledging that science still contains plenty of unsolved problems, Eisgruber and Sager affirm that these pending issues "call for new theories and more experiments, not speculation about supernatural intervention by deities, wizards, fairies, or space aliens" (2009: 190). Finally, the philosopher Robert Audi has asserted that we should stand with "the common and not unreasonable commitment to methodological naturalism, [implying] that any creationist or ID view that presupposes or self-evidently entails a supernaturalistic proposition is not a proper object of scientific appraisal" (2009: 29). All these liberal voices concur with the basic argument underlying the Court's ruling in *Kitzmiller v. Dover*: science and the supernatural do not go together. Creationist theories, no matter how sophisticated they are, should then be dismissed from the scientific curriculum insofar as they are suggesting a non-naturalistic way to account for the origin and causes of biodiversity.

If this line of reasoning is sound, the epistemic leg of the CC would be entirely misplaced: liberal institutions will not violate any relevant commitment to metaphysical fairness by adhering to a principled version of MN. In the language of liberal neutrality, any position that supports metaphysical naturalism will be "secular in the strong sense [and] not just in the neutrality sense" (Audi: 2009: 35), and therefore anti-theistic. In turn, MN is not "anti-theistic but neutral with respect to theism" (Audi: 2009: 43). In other words, while

metaphysical naturalism can be fairly depicted as a comprehensive doctrine on a par with religious conceptions, a mere procedural understanding of naturalism cannot. Invoking the MN Objection has been one of the preferred liberal strategies to reject the creationist request and to reassert that liberal institutions are not breaching any promise of neutrality in this respect.

3. The Impossibility of a (Political) Demarcation.

Prima facie, the MN Objection is promising. It states that science is by no means denying theism; it is only asserting that the kinds of factual claims associated with theism –e.g. supernatural agency- should remain beyond its scope because *that's the way science is*. But this response has been increasingly challenged. In what follows I will review the main arguments against it.

3.1 Conclusive demarcation efforts have consistently failed.

Like NOMA regarding religion, the argument for MN rests on the assumption that it is possible to identify a set of clear criteria to determine *what is* and *what is not* science. So, the argument fails if such an assumption were found to be vulnerable. Philosophers of science have had a centennial intellectual struggle in trying to determine convincing parameters to demarcate the province of science. But despite all Popperian and post Popperian efforts to draw a distinguishable line, many have concluded that such a venture is hardly promising.⁶ Some philosophers of science, prominently Larry Laudan (1983), have gone further to decree the entire demise of the demarcation enterprise. Perhaps the best representative of this fundamental scepticism was Paul Feyerabend, but it is not necessary to embrace his radical notion of epistemic anarchism to question the traditional lines of scientific demarcation.⁷

⁶ As Kitcher reports, “for the past half century, philosophers have tried and failed to produce a precise account of the distinction between science and pseudoscience. We cannot seem to articulate that essential line of demarcation” (2007: 11).

⁷ To Feyerabend (1975), philosophers are not entitled to stipulate in advance what is going to be allowed to count as genuine scientific method, or where the boundary between science and non-science is to be drawn, since any attempt to lay down rules in advance only invites transgression. After all, he recalls, many people tried to rule out in advance *prima facie* counterintuitive theories such as the transmutation of species, General Relativity and quantum theory.

Thus, a rather incredulous attitude towards the whole demarcation possibility –or about its relevance altogether- has gained momentum in the last few decades. This surely contrasts with the confidence that liberal political theorists show on the matter. It appears that theories that suggest non-naturalistic agency cannot be simply discarded by appealing to some undisputed criterion of demarcation, such as falsifiability, testability, regularity or predictive capacity, to name the usual suspects. This is because those criteria are themselves highly contested. When it comes to falsifiability, Popper once thought that Darwinian natural selection did not pass the test. He argued that Darwinism was “a metaphysical research programme –a possible framework for testable scientific theories” (2009: 167), but was not itself testable. Today, highly sophisticated propositions such as those contained in superstring theory or other speculative sciences are not readily testable.⁸ On the other hand, creationism could become falsifiable: some of its factual postulates are demonstrably false. Theories about Noah’s flood have been superseded by better explanations. Michael Behe’s example of the bacterial flagellum -the child poster of the ID movement- has also been addressed by his scientific peers and found wanting.⁹ Other hypotheses of typically theistic supernatural activity have been scientifically tested, like in studies of intercessory prayer.¹⁰ Regarding regularity, events like the Big Bang, supernovas or the very beginning of organic life from the primeval soup cannot be replicated every time we walk into the lab. However, nobody would deny that these are paradigmatically scientific claims, just because they cannot be repeated under controlled experiments. Finally, the capacity to make predictions does not rest on the character of causation but on the way in which theories are constructed. Even Newton’s and Darwin’s theories needed a bundle of other auxiliary hypotheses and additional assumptions.¹¹

⁸ As McGrath observes, M-theory -the theory that unifies all consistent versions of superstring theory- “seems to have acquired public respect and credulity in advance of any experimental confirmation” (2015: 65).

⁹ For a rebuttal of Behe’s claims on the irreducible complexity that some organisms -such as the bacterial flagellum- display, see Miller, 1999: 129-164. Massimo Pigliucci sums the point affirming that “very few scientists, and possibly philosophers, would maintain that *specific* creationist claims are not testable. Just as in the case of claims from, say, astrology or parapsychology, one *can* easily test young creationists’ contention that the earth is only a few thousand years old” (2013: 16).

¹⁰ Several scholarly studies have been conducted to find out whether the claim that praying for somebody who is sick have positive effects on the health of the person being prayed for is true or false. The latest of importance was directed by the Harvard professor Herbert Benson in 2006, under the title of “Study of the Therapeutic Effects of Intercessory Prayer (STEP)”. In general, literature reviews on the issue have found no meaningful effects. But the tests have been performed following the rules of the scientific method.

¹¹ As the philosopher of science Tim Lewens has noted regarding ID, we cannot fault it “on the grounds that it makes no concrete predictions, for no theory makes predictions when considered in isolation” (2015: 37).

As I expect to show later, it is not entirely the case that a line cannot be drawn between science and pseudo-science. Or, as I prefer, between good science and bad science. Here, the move that we regard as problematic is drawing the line in the natural vs. supernatural divide. To be sceptical about traditional demarcation criteria is not the same as committing to the idea that, in science, anything goes. The scientific quest has its rules, or at least I shall argue so. For now, the fundamental question is whether these rules about how science should be done are necessarily attached to the presumption that the divine's footprints are untraceable *in principle*. It does not seem to be the case.

3.2 The spirit of science: mission and not definition.

In his ruling, Judge Jones was explicit in highlighting that a rigorous attachment to natural explanations was an essential attribute of science 'by definition'. But appealing to a single definition is even a weaker strategy than appealing to some controversial demarcation criteria. By themselves, official definitions do not provide reasons, which should be articulated. However, no reason is likely to succeed if it contradicts science's biggest expectation: to be able to explain and provide a picture of the world that is as accurate as possible. Many people with theistic beliefs think that such a picture is somehow truncated without supernatural intervention. MN is impregnated with the political correctness of Gould's NOMA, but the message that creationists are receiving is seldom comforting: their God is just not good enough to even compete for the best explanation, overall. Thus, conspicuous theistic voices have complained that this definitional strategy under which science implies MN is simply arbitrary.¹² It is not only theists who feel this way.¹³

¹² Alvin Plantinga has stated that "it is hard to see how anything like a reasonable dispute about what is and is not science could be settled just by appealing to a definition" (2001b: 345). The same point has been stressed by Johnson: if science is defined in such a way that advocates of supernatural creation can neither argue for their own position nor dispute the claims of the scientific establishment, "that may be one way to win an argument, but it is not satisfying to anyone who thinks it possible that God really did have something to do with creating mankind" (2010: 26). Meanwhile, Cardinal Schönborn acknowledges that scientists like to assert that their commitment to materialism is purely methodological so it does not represent a worldview. But he adds that "even if that were so, it is nevertheless clear that this methodological option is an intellectual act that presupposes reason, will and freedom. That alone is already enough to show that the restriction of the scientific method to purely material processes cannot do justice to the whole of reality" (Schönborn, 2008: 93).

¹³ Thomas Nagel has argued that, "a purely semantic classification of a hypothesis or its denial as belonging or not to science is of limited interest to someone who wants to know whether the hypothesis is true or false" (2008: 195). Terry Eagleton has expressed a similar view: "Among the assumptions that science takes for granted, for example, is the postulate that only natural explanations are to be ruled in. This may well be a wise supposition. It certainly rules out a lot of egregious nonsense. But it is indeed a postulate, not the upshot of a demonstrable truth" (2009: 131). This is interesting because, as showed in the previous chapter, Eagleton is a strong voice against the idea that religion has anything to do with science.

If both science and religion crave about what is true, all things considered, no definitional move will be sufficient to quench such thirst. As the conclusions in *Kitzmiller v. Dover* acknowledged, it could be the case that theistic explanations are, overall, closer to the true story. But even if that were the case, they would not be classified as scientific explanations if we are bound to a principled version of MN. Thus, some philosophers have come to believe that no sensible understanding of science can be too narrow as to leave outside of its scope a whole set of hypotheses that, at least theoretically, can bring us closer to the factual truth about certain phenomena. Here I follow those philosophers who advise to adopt a rather broad notion of science, consistent with its general cultural mission: to describe and explain the workings and causes of phenomena in the domain of factual reality, thus without targeting as *a priori* unscientific those hypotheses that rely on a degree of non-material agency at any point.¹⁴

If those hypotheses are to be dismissed, it should be because of their low exploratory capacity. In other words, the dismissal of divine participation as a *proficient* scientific explanation for a given phenomenon should not be conflated with its dismissal as a scientific *possibility* from the very beginning of the inquiry. Although we can remain highly sceptical that theories such as ID could become any stronger in the future, that *might* be the case. At any rate, it would be consistent with the history of science, in which new paradigms override older ones. The emergence of new knowledge is the birthmark of the scientific project. But we will not have access to that knowledge if we insist, recalling Lewontin, that “we cannot allow a Divine Foot in the door”.

3.3 The argument from tradition.

One of the arguments contained in the *Kitzmiller v. Dover*’s verdict as well as in the writings of political theorists is that science has been traditionally understood as a project in which

¹⁴ Among this group, Taner Edis has argued that, “perhaps evolution cannot account for life, and we do need intelligent design. The business of science, surely, is to help us figure out whether this is the case; if it cannot even address the question, there must be something wrong with our understanding of science” (2002: 59). In the same vein, the neuroscientist Yonatan I. Fishman also believes that the strategy of targeting supernatural hypotheses for exclusion “runs the risk of arbitrarily excluding from scientific consideration phenomena that might actually exist” (2007: 829). Additionally, Evan Fales has warned that we should not presume to know enough about causation “to rule out dogmatically the possibility that an agent exists somehow outside space or time and causally interacts with physical matter” (2007: 123). Fales states, “that the mission of science is to explain whichever phenomena we discover, and in particular, to discover the causes of things. Whatever has causal influence on the material world can, in principle, be detected and measured. So, if supernatural beings exercise such influence, why should science refrain from characterizing the causes of phenomena so produced?” (2007: 124).

speculations about the supernatural are not allowed. In the words of Nancey Murphy, “it is a fact of history (perhaps an accident of history) that this is how the institution of natural science is understood in our era” (2001: 464). But this is also a vulnerable argument. Science was not always described in those terms. The names René Descartes, Isaac Newton, Francis Bacon, Blaise Pascal, George Lemaître, Gregor Mendel, William Paley and Pierre Teilhard de Chardin -among many others- should be enough to remind us that the God of Christianity not only served as inspiration for some of the most ground-breaking scientific discoveries throughout modern history, but also that more than a few supernatural hypotheses were entertained and explored during the process.¹⁵ As Kitcher recalls, “for much of the history of inquiry, great scientists have advanced specifically religious hypotheses and theories” (2007: 9).

The general thought of a super-intelligent designer goes back to the history of cosmology, as well as to the history of the earth and life sciences. It was once a fruitful hypothesis and many achievements were built upon such a framework. The case of evolution is the most notorious. Before Darwin, Paley’s watchmaker analogy was a respected scientific view that aimed to explain the diversity of life forms and their more-than-apparent design. As noted by George Levine, Darwin did indeed “begin by seeing the world with Paleyan eyes” (2006: 16). The very formulation of the theory of evolution -as Nagel evokes- “did not depend on the assumption that design was impossible. On the contrary, it developed as an alternative to design” (2008: 200). Moreover, prior to the publication of *On the Origin of Species*, evolutionary ideas were the ones regarded in serious circles as pseudoscientific (Ruse, 2005). Hence, as even Popper recognized in his day, it is difficult to disentangle the role of myths and proto-scientific theories from further developments. Thus, the view that science has historically been understood as a purely naturalistic enterprise is not entirely accurate. It cannot therefore serve as a basis to rule out supernatural hypotheses from the purview of science.

3.4 MN as discursively counterproductive.

When told that their theories cannot even compete for the best explanation because they point to special supernatural creativity, creationists are quick to claim that science shows a

¹⁵ Barbara Forrest sensibly observes that, “the historical entanglement of science and religion does not make the religious inspiration of scientific discoveries itself scientific” (2013: 266). Fair enough. However, in many of these cases, religion was not just a motivation for a given piece of research. Newton’s theories, for instance, were not only inspired by his faith, but the theories themselves were also concluded in favor of supernatural agency. As he stated in the introduction to his *Principia* (1687), “This most beautiful system of the sun, planets and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being”.

dogmatic anti-theistic bias, and, because of this epistemical commitment, mainstream theories remain scientifically unchallenged. The sentiment that creationists want to communicate is that Darwinism is winning because it runs without competitors. This is not very meritorious after all: if no supernatural hypotheses are allowed, a naturalistic one will always prevail -not because it is necessarily true, but because the playing field does not permit a different outcome. Creationists, then, might want to draw upon Mill's celebrated distinction between "presuming an opinion to be true, because, with every opportunity for contesting it, it has not been refuted, and assuming its truth for the purpose of not permitting its refutation" (1974: 79), where Darwinian evolution would represent the latter case. In that spirit, creationists have claimed that as long as the rules of MN are in force, Darwinian evolution cannot be unseated¹⁶.

This could be pure rhetoric, but it does sound persuasive to many people. Thus, it has been detected that the argument for MN is "grist to the mill of anti-evolutionism" (Boudry, Blancke and Braeckman, 2012). As Victor Stenger rightly puts it, scientists who want to restrict science to purely natural causes "have played right into the hand of those who try to argue that science has a dogmatic commitment to materialism that prevents it from even considering any alternatives" (2007: 15). Unsurprisingly, but no less paradoxical, ID advocates have proclaimed themselves the open-minded side in this debate, to the extent that they are – supposedly- willing to consider all types of evidence, whether natural or supernatural, to produce the best explanation for biodiversity.¹⁷

But the particularly uncomfortable claim to many evolutionary biologists is that creationism has not been properly refuted.¹⁸ As MN entails that religious myths remain unassailable

¹⁶ Accordingly, as Phillip Johnson puts it, "the blind watchmaker hypothesis is therefore merely a way of stating the commitment of science to naturalism and as such the existence of a blind watchmaker is a logical necessity" (2001b: 445).

¹⁷ To picture orthodox evolutionary biologists as intolerant to divergent opinions is the explicit aim of the documentary *Expelled: No Intelligence Allowed* (2008). Here, the actor and political commentator Ben Stein aims to expose those institutions that betray academic freedom by firing or harassing those scholars who question the sufficiency of Darwinism. Again, this claim has been acidly articulated by Johnson: "The contempt with which many evolutionary biologists regard anyone who doubts their theories has to be experienced to be believed. Evolutionary naturalists like to think of themselves as playing the role of Galileo defying an authoritarian church, but to those of us who are skeptical of naturalism, they would be more appropriately cast as the College of Cardinals" (1995: 18).

¹⁸ With the occasion of the McLean v. Arkansas Board of Education trial over the 'Balanced Treatment for Creation-Science and Evolution-Science Act', Larry Laudan criticized the court's decision on these grounds. Although Laudan was pleased that the rustic Creation-Science was expelled from the biology curriculum, he nonetheless argued that the court had arrived at the right decision using an incorrect criterion. Laudan wanted to show with scientific arguments that the whole creationist narrative was utterly mistaken in its factual

insofar as science is forbidden to address them, creationism rest alive and healthy in the eyes of the political community. In this respect, Boudry, Blancke & Braeckman share Laudan's suspicion that, in the name of MN, religiously-loaded factual claims are being undeservedly immunized from scientific scrutiny, while giving ID proponents the perfect victimization strategy, to the extent that a principled version of MN "leaves the public with the impression that evolution by natural selection appears to win the scientific debate only because supernatural designers were already carefully excluded from the outset" (2012: 1163). Therefore, to avoid this counterproductive strategy, the recommendation should be the opposite: instead of adopting a principled version of MN, creationist theories that appeal to supernatural agency should be welcomed for subsequent examination. As already noted, a significant portion of the factual claims historically made by religious traditions have been successively discredited or rendered less plausible as science progresses.

4. Nagel's Case Against Methodological Naturalism.

Thomas Nagel is arguably one of the leading moral and political philosophers of our time. His recent assault against reductive materialism (2012), has stirred the waters of the intellectual secular community.¹⁹ Although Nagel counts himself as an atheist, he believes that a comprehensive neo-Darwinian picture of the world cannot possibly be right. Specifically, Nagel rejects the view that the whole of reality –including the emergence of conscience- can be exhaustively explained by random and undirected physical, chemical and biological processes alone. Of course, he also rejects the claim that theism is a better alternative. He declares to be searching for a sort of intermediate position between the two all-encompassing forms of understanding, a sort of non-theistic-but-still-teleological position that is yet to be found.²⁰

assertions, but he found himself impeded in doing so: after all, science was judicially hands-tied regarding hypotheses with supernatural components.

¹⁹ In March 2013, *The Weekly Standard* magazine dedicated its main story to this philosophical divorce. On its cover, Nagel was being burned at the stake under the title *The Heretic*.

²⁰ In Nagel's words, "theism does not offer a sufficiently substantial explanation of our capacities, and naturalism does not offer a sufficiently reassuring one... The respective inadequacies of materialism and theism as transcendent conceptions, and the impossibility of abandoning the search for a transcendent view of our place in the universe, lead to the hope for an expanded but still naturalistic understanding that avoids psychophysical reductionism... and expanded, but still unified, form of explanation will be needed, and I suspect it will have to include teleological elements" (2012: 25, 32-33).

So much for Nagel's personal metaphysical stance. Here I am more interested in his position regarding the Courts' systematic ruling against the introduction of non-materialistic hypotheses into the science classroom. In a controversial article (2008), Nagel contends that the fact that non-materialist hypotheses are simply not considered as possibilities to explain surrounding phenomena might well be an assumption of the scientific project, but at any rate it is a philosophical and not a scientific assumption. Nagel spend some time discussing whether science *ought to* rest on the shoulders of such an assumption. He concludes that it is a philosophical assumption that levels the scales against non-materialistic worldviews such as traditional theism. Therefore, it is an assumption that is difficult to square with the principles of political liberalism, particularly with the principle which mandates coercive institutions to be neutral regarding religious and nonreligious claims. Nagel thinks that the promise of liberal neutrality is unavoidably breached if political institutions embrace a principled version of MN, because "it would depend on a view, atheism or theistic noninterventionism, that falls clearly in the domain of religious belief" (2008: 201). Of course, we would face the same predicament if only non-naturalistic explanations were allowed. The problem is discrimination against either metaphysical assumption. Regarding the specific claim of ID creationism, Nagel goes on to assert that:

"Both the inclusion of some mention of ID in a biology class and its exclusion would seem to depend on religious assumptions. Either divine intervention is ruled out in advance or it is not. If it is, ID can be disregarded. If it is not, evidence for ID can be considered. Yet both are clearly assumptions of a religious nature" (2008: 200).

It is important to bear in mind that Nagel is endorsing the creationist script that cast doubts over the scientific proficiency of evolutionary theory.²¹ His argument is about the antecedent beliefs that reside in our mental structure even before we assess a given scientific claim. Accordingly, one cannot help but to *a priori* estimate a certain degree of probability to God's creative agency. An atheist will assign zero or almost zero probability to such a hypothesis. In turn, theists will take that possibility very seriously.²² This baseline disagreement, again, is

²¹ Although Daniel Dennett includes Nagel into the broad creationist family. The problem with Nagel, according to Dennett, is that he "can't abide Darwin's strange inversion" of reasoning (2009: 10062). What is this "strange inversion of reasoning"? That to make a beautifully complex and functional machine it is not requisite to know how to assemble it beforehand In Dennett's nomenclature, Nagel would be still looking for (supernatural) *skybooks* instead of accepting that (natural) *cranes* do the work just fine.

²² This is also Plantinga's point: that the metaphysical starting point defines everything. As Plantinga frames it, "from a non-theistic perspective, the evolutionary hypothesis will be vastly more plausible than alternatives..."

not scientifically-grounded but it must be traced back to a metaphysical or religious stage where “the two sides are in symmetrical positions” (Nagel, 2008: 197). Thus, the only way that is consistent with liberal neutrality seems to be a pedagogical strategy of *non-committal* discussion of these issues within the science curriculum.

Certainly, Nagel is not arguing for the inclusion of every single creation-myth in the mandatory curriculum. He distinguishes between revealed versions of creationism –such as the belief that the Earth is 6.000 years old or the claim that God created all species pretty much in their present form- and more sophisticated accounts such as ID, whose advocates do not deny the bare fact of evolution but disagree with the alleged self-sufficiency of Darwinian mechanisms. To Nagel, the crucial difference is that ID theorists are willing to provide at least some evidence in support of their position. Therefore, the denier of the notion that ID is science faces the following dilemma:

“Either he admits that the intervention of such a designer is possible, or he does not. If he does not, he must explain why that belief is more scientific than the belief that a designer is possible. If on the other hand, he believes that a designer is possible, then he can argue that the evidence is overwhelmingly against the actions of such a designer, but he cannot say that someone who offers evidence on the other side is doing something of a fundamentally different kind. All he can say is that he is scientifically mistaken” (Nagel, 2008: 195).

Therefore, Nagel has no problem in accepting that ID is far from being the ideal suitor to overthrow the evolutionary paradigm. His argument for metaphysical symmetry does not add to the case of creationism’s explanatory credentials. However, he points out that we do not need an ideal suitor to keep the competition for scientific truth open, only a *conceivable* alternative.²³ Hence, only the practitioners of Biblical versions of creationism would be “doing something of a fundamentally different kind”.²⁴

[it is rather] the only game in town”, whereas “the Christian knows that creation is the Lord’s and she isn’t blinkered by a priori dogmas as to how the Lord must have accomplished it” (2001a: 136, 139).

²³ Here, Nagel is following Kent Greenawalt, who argues that, “the comparatively modest claims on behalf of intelligent design are more plausible” than those advanced by creation-science, “if they do no more than challenge the completeness of the dominant account of how complex life developed” (2005: 107-108). Hence, “all one can say based on present science is that intelligent design is one *conceivable* component of a full theory of how complex life developed” (Greenawalt, 2005: 117).

²⁴ Although Nagel’s modest suggestion is to allow some room for the discussion of non-naturalistic possibilities such as ID, some scholars believe that his reasoning is problematic since it “provides support for equal-time

What do we make of Nagel's case against MN? For our purposes, the crucial question is whether the argument for MN can be legitimately adopted by the state to justify decisions regarding the compulsory curriculum. In other words, could the argument for MN serve as a basis for a political decision such as a court ruling or an administrative order? Even if we accept that the scientific community does generally take MN as a feature of its professional activity, such a consideration does not automatically determine the content of political decisions in liberal settings. Nagel acknowledges that, perhaps, "not considering divine intervention a possibility is just a basic epistemological condition of modern science", but he goes on to argue that "we cannot, however, make this a fundamental principle of public education" (2008: 200-205).

After much consideration, I think that Nagel is on to something here. MN seems to be inconsistent with the spirit of neutrality in the following sense: the metaphysical possibility of a hands-on deity and the metaphysical possibility of its inaction (or even more, its nonexistence) should stand on a symmetrical footing before the eyes of the liberal state. Thus, its institutions should not officially endorse any of them. As compulsory schooling and its curricular content belong to the state's duties regarding education, they are not exempted from this commitment to metaphysical impartiality. The crux of Nagel's argument is that the reasoning underlying any state action directed at prohibiting discussion of ID in the classroom *just because* it suggests supernatural causation would depend on a particular metaphysical view: that either god does not exist (atheism) or that god does not intervene in the universe (theistic noninterventionism). Arguably, Nagel concludes, to take such a position from a political standpoint goes against the requirement of religious neutrality and the idea that liberal constitutions should neither encourage nor discourage theism, deism, pantheism, agnosticism, atheism, or any other system of beliefs that attempts to answer ultimate questions about the human experience.

It is important to grasp the sense in which a principled commitment to MN is tantamount to metaphysical unfairness. Defenders of MN claim that it only works as an epistemic rule, and therefore it has no ontological ambitions: with MN, they argue, science is not declaring what types of things, beings and realities exist throughout the universe. But, as Barbara Forrest recalls, ontological categories and philosophical perceptions about the world are not

and possibly even more radical policies" (Aikin, Harbour and Talisse, 2009: 39). I am not convinced by this critique. While it is true that Nagel moves the controversy to a metaphysical stage in which naturalism and theism are symmetrical assumptions, this does not imply that good and bad scientific theories deserve the same attention.

articulated from a blank page. They are the product of certain epistemological constraints that determine the range of possible outcomes. In Forrest's assessment, insofar as "only natural causal factors are methodologically and epistemologically legitimate as explanations, then only a naturalistic metaphysics is philosophically justifiable" (2000: 12-24). Accordingly, metaphysical naturalism might be presented as an outgrowth of methodological naturalism. The implication of this are in sight: MN does not need to deny the existence of supernatural forces intervening in nature to potentially achieve, indirectly, much the same effect. This is the nub of Nagel's argument: while he understands that the view underpinning MN "may not be a matter of faith or ecclesiastical authority, it does seem to be a basic, ungrounded assumption about how the world works, essentially a kind of naturalism" (2008: 194). The problem with naturalism -as we have already noted- is that it entails atheism. Then, we are back to square one: as creationists contend, if science is indissolubly attached to MN, and MN works as a sort of "provisional atheism" (Plantinga, 2001a: 137), then science seems to be a philosophically atheistic project. Therefore, a retreat to MN is not necessarily neutral from the relevant perspective, and it does not defeat the CC. Like NOMA, it should also be discarded as a suitable liberal reply to exclude creationism from the science classroom.

Summary

Creationists accuse science of being structurally biased against theistic attempts to explain factual reality. This is because science is indissolubly committed to naturalism, the view that the universe and its processes can be sufficiently accounted for by materialistic means. In this picture, disembodied minds have no role to play. Therefore, creationists conclude, scientific teaching in a scheme of compulsory education contributes to nudging students and future citizens into atheism or other forms of theistic noninterventionism. This represents an obvious unfairness from a liberal perspective.

Philosophers of science and political theorists have replied by distinguishing between a strong metaphysical naturalism -the comprehensive ideology that contradicts theism- and a weaker methodological naturalism (MN) – a procedural rule to conduct scientific research. According to the latter, science only deals with natural causation. To the extent that creationists are pointing to supernatural creative activity, their theories are beyond the scientific pale. However, the MN Objection is vulnerable to serious criticisms.

First, the view that supernatural causation can never be part of a scientific investigation does not seem fully warranted even by traditional criteria of demarcation. Second, to define science as inexorably naturalistic in its scope of methodological possibilities does not work either, at least if science's ultimate vocation is to explain whatever phenomena we discover and their causes. Third, we cannot rest on the historical assertion that science has always been conventionally understood as methodologically naturalistic because that is not the case. Even if it were, it is not a normative argument. Finally, the *a priori* disqualification of supernatural hypotheses has served creationists to enhance their victimizing discourse. Specifically, they claim that their theories have not been properly refuted because they have not been properly considered. But, as some scientists and philosophers have warned, the latter is not a wise strategy if the aim is to persuade the public of the scientific strengths of evolutionary theory rather than giving the impression that it wins by philosophical W.O.

More importantly for our research, a principled exclusion of supernaturalistic possibilities from scientific investigation it is not itself a scientifically-based position but it reflects a prior metaphysical assumption about the probability of certain causative agents. This metaphysical assumption is not necessarily coherent with a wide range of beliefs associated with theistic interventionism. Therefore, if political institutions were to sanction MN as an official stance, liberalism would be betraying its promise of religious neutrality. This does not mean that creationism merits being included in the mandatory science curriculum. It means that the argument for its eventual exclusion cannot be built on the mere fact that it suggests supernatural action.

Between Adjudication and Non-Adjudication

The Two-Tier Model of Liberal Neutrality

Until now, this work has been chiefly focused on assessing the CC against its most standard liberal replies. We have presented the CC as a prototypically ‘scientific’ claim issued by certain theological traditions. In an acronym, a SCR. We have split the CC into two parts. On its substantive face, the CC asserts that mainstream evolutionary theory stands for a specific picture about the cosmic place of humankind and the structure of the universe that is difficult to reconcile with theism, at least with the kind of theism that implies a God who is creatively, actively and purposefully participating in spatiotemporal reality. On its epistemic face, the CC accuses liberal institutions –from courts of justice to educational boards and executive officials- of favouring a fully materialistic understanding of the scientific project -and science education by extension- by arbitrarily excluding the possibility of the supernatural from its research scope. Both, in a way, point to the same problem: political liberalism is failing to fulfil its promise of religious neutrality. In the substantive case, educational institutions would be promoting a naturalistic worldview that is *as* controversial and comprehensive as any theistic doctrine. In the epistemic case, educational institutions would be embracing a notion of scientific knowledge that is structurally biased against non-naturalistic hypotheses, thus arbitrarily restricting the range of possible conclusions.

As shown in the previous three chapters, none of the standard liberal replies to the CC succeeds. Although evolution by means of natural selection is first and foremost a scientific theory, it is hard to conceal its expansive capacities and philosophical implications. Thus, creationists are partially right to think that it amounts to an overall world picture. Other philosophers have stressed that religion is a *noumenal* experience that is detached from any explanatory aim. However, this does not do justice to the complexity of religious beliefs. Most theistic traditions make factual claims, not as a matter of trivial information about the world, but (sometimes) as essential components of their theological narrative. Finally, there is the more sophisticated MN Objection. Accordingly, science is definitionally bounded to avoid speculation about supernatural forces. But, as many philosophers of science have observed, any official stance on the demarcation problem is doomed to be controversial. Hence, we have endorsed Thomas Nagel’s case against MN: by excluding supernatural

hypotheses in principle from the scientific quest for factual explanations, political institutions are sanctioning a view in which godly intervention is either inexistent or irrelevant. Such a view is not scientific in itself but reveals a meta-scientific decision that violates the liberal commitment to religious impartiality.

Taking the above into account, it might be suggested that the CC prevails either way. As the Darwinian paradigm amounts to a partial comprehensive doctrine –one that is naturalistic by default- the public system of education *should* include theistic-friendly accounts in the science curriculum to balance the influence exerted by the former. At any rate, that is what a neutral treatment appears to require. As the appeal to any principled version of MN does not work either, educational authorities will not be politically warranted to exclude creationist views just because they suggest supernatural action. Instead, they *should* be more receptive to views such as ID theory.

This chapter serves as a bridge between the problem and the solution to the challenge posed by creationists to the liberal state. On the one hand, it argues that the fact that a scientific theory has philosophical implications and triggers disturbing thoughts beyond the domain of pure factual description does not result in accepting any balanced treatment proposal. It might be the case that the teaching of Darwinian mechanisms in the biology module -as creationists fear- provokes further reflections in young minds that, eventually, could lead them away from certain theistic understandings. But political liberalism is not in the business of preventing people from confronting scientific facts that could affect the validity or consistency of some religious propositions or prior cultural assumptions. As most liberal thinkers maintain, liberal fairness is not about securing even outcomes. But, on the other hand, this chapter concedes to the argument that liberal institutions should not *a priori* disqualify claims from the task of broadening our understanding of factual reality. This means that supernatural and natural hypotheses will be equal before the eyes of political liberalism. Only then are political institutions legitimated to rely on a specific epistemic filter to, first, achieve scientifically trustworthy knowledge and, second, pass it to the next generations through mandatory education.

This is what I call the model of two-tier neutrality: at one level, the liberal promise of neutrality would be fulfilled by assuming a non-adjudicative stance between competing metaphysical assumptions about the limits of the scientific project and the plausibility of God's agency; on a different level, liberal education bears the responsibility of adjudicating between competing hypotheses when it comes to deciding what fundamental knowledge

about factual reality should be passed on to the following generation. Accordingly, creationist views might still be excluded from the compulsory science curriculum, but not for the reasons already reviewed and discarded in the preceding chapters.

The chapter is structured as follows. Section 1 offers some operational remarks regarding the much-contested concept of liberal neutrality. Drawing on some of Nagel's observations regarding the case against MN, section 2 articulates the idea of non-adjudicative neutrality when it comes to the metaphysical assumptions of the scientific project. Section 3 comes back to the debate on demarcation, proposing a slightly different way of thinking about the boundaries of science. Section 4 introduces the idea of adjudicative neutrality, as a second level in which liberal institutions are warranted to decide on the plausibility of competing factual claims. Section 5 makes a general point about the eventual problem of uneven outcomes from the creationist perspective.

1. A Matter of Neutrality?

The debate over whether creationist alternatives deserve a hearing in the science classroom –to either complement or supplement the dominant Darwinian theory- has often been portrayed as a political issue in which the liberal promise of neutrality is at stake. Creationists argue that neutrality requires the inclusion of non-naturalistic hypotheses next to naturalistic ones. Otherwise, they insist, liberal education would be abusing its coercive resources through systematically disfavoured the view that God could have been actively involved in the creation of the universe as well as the belief that divine agency plays an ongoing role in the unfolding of cosmic phenomena.

For many political theorists, the principle of neutrality is to be applied -if anywhere- to competing conceptions of the good. Or, as it is sometimes amended, between individuals holding competing conceptions of the good. Most of them would be puzzled by the suggestion that, in the name of neutrality, liberal institutions should commit to a curricular policy of even-handedness between a widely accepted scientific theory and a slightly disreputable piece of pseudoscience.¹ However, we have shown that certain scientific

¹ For instance, Alan Montefiore explains that neutrality cannot imply that we should assess each and every view about a subject if some views are “so absurd as not to be worth his serious treatment” (1975: 18). No geographer or astronomer, Montefiore exemplifies, “would be considered as biased or narrow-minded simply because he

conclusions affect our worldview in a way that is beyond the cold description of facts. As I will entertain by the end, it is possible to think about the normative and the non-normative as a porous continuum rather than a strict divide. In this sense, this work takes the CC seriously: creationists are not asking liberalism to be neutral towards alternative value-free statements about factuality as such, as if liberal institutions could be required to remain neutral given an accurate description of the world and an obviously false one. Instead, creationists are primarily asking liberalism to acknowledge that (some) scientific statements could be *as* controversial as conceptions of the good. After all, factual truth-claims might be relevant components for a whole comprehensive narrative. They can be related to metaphysics and morals in a way that is just too difficult to disentangle. In conclusion, creationists have good reason to believe that neutrality-talk is pertinent here insofar as we are dealing with a subject that soars beyond its pure factual content and develops into controversial views.

To affirm that neutrality-talk is pertinent does not settle the issue. As we know, neutrality is a highly-contested concept within contemporary political philosophy. For two decades or so it was commonly assumed to be a core principle, a truly distinctive notion, of the liberal project. Although the most important liberal theorists did not agree entirely on what neutrality was, their conceptions shared some basic features (Ackerman, 1983; Dworkin, 1985; Larmore, 1987; Nagel, 1987; Kymlicka, 1989; Rawls, 1993). Roughly speaking, neutrality was about the state treating its citizens in an impartial way. As pluralistic societies include different lifestyles and people upholding diverse values, the principle of neutrality declared that political power should not be used to reward or penalize, promote or hinder, foster or undermine, controversial comprehensive doctrines. Individuals were then free to pursue their own (reasonable) conceptions of the good. As such, it was said that neutrality was fundamentally a doctrine of restraint: the state was exercising self-control over its own coercive faculties in the name of a liberal ideal.

However, the tide changed and internal critics of liberal neutralism went on the offensive (Raz, 1986; Sher, 1997; Arneson, 2003). Some of these theorists held that it was entirely legitimate for the liberal state to promote certain objective values in the public arena. Others emphasized that neutrality was impracticable because the liberal state could not honestly avoid taking a stand on controversial issues. This is without even mentioning the external

refused to spend time on careful exposition and consideration of the views of the Flat Earth Society” (1975: 18-19).

attacks that neutralism received from both the fully-perfectionist and the communitarian camps. Recently, some authors have seen the necessity to articulate a reply to restate and defend the core value of neutrality (Lecce, 2008; Quong, 2011; Patten, 2012). This ongoing discussion is beyond the scope of this work. Nonetheless, here we are taking on board some basic coordinates of that debate. As the CC is articulated as a critique against the consistency of liberal neutrality, it is important to flesh out how this normative framework operates and what are its internal resources for resolution.

The first conceptual coordinate can be roughly stated as follows: the fundamental intuition underlying almost any notion of neutrality is about *not taking sides* in a contest or conflict. To be neutral is to side with nobody. We hope that judges and football referees are neutral in the sense that they are not predisposed to side with one of the parties in a dispute. In this sense, neutrality is associated with impartiality and fairness. As I expect to show, this idea of *not taking sides* could be embodied in different political strategies. Sometimes, this fundamental intuition will advise a non-adjudicative stance in which political power is silent towards the parties' claims. In other contexts, the same intuition might recommend a fully adjudicative stance, in which the state takes on its shoulders the responsibility of rule between competing claims.

The second coordinate is that neutrality is usually seen as an *instrumental* value. This means that liberals do not cherish neutrality for the sake of neutrality itself but because there is some 'independent reason' that justifies such a stand.² While this independent reason works as a high-order principle, neutrality operates as a second-order principle (Barry, 1995), an executive virtue (Goodin and Reeve, 1989) or a downstream value (Patten, 2012) to secure the former. Put it succinctly, the liberal state justifies neutrality for non-neutral high-order reasons. These high-order reasons have been articulated in many ways in the liberal literature, but most are linked to the recognition of the moral value of individuals, to the liberal thought that persons should be free to pursue different life projects, to the duty to treat citizens with equal respect, and even to a fair distribution of material resources and opportunities. Hence, political liberalism is not expected to be neutral towards these kinds of constitutive commitments. We can recognize the same high-order principles in our case study: neutrality

² This notion was introduced by Robert Nozick. Discussing the prohibition of rape, Nozick argued that there were independent reasons for it: that people have a right to control their own bodies, to choose sexual partners, and to be secure against physical force and its threat. Of course, Nozick acknowledged, this prohibition will affect rapists and non-rapists in a different way. But that is not the sense in which the state should remain neutral. Once these independent reasons are set, the state should apply them in a neutral way (Nozick, 1974: 271-274).

towards alternative metaphysical assumptions is instrumentally valuable as it reflects the state's commitment to treat people with different ultimate beliefs with equal respect. But, of course, political power is not supposed to be neutral between equal respect and disparaging treatment. Furthermore, if the political aim is to provide an accurate picture of factual reality through science, liberalism is not expected to be neutral towards the values underlying the scientific project, such as logical coherence, empirical adequacy and intellectual honesty. The latter work as independent reasons that set the benchmark against which we evaluate different factual claims *in a neutral way*, i.e. without biased, arbitrary or a priori preference. There is no normative need to stick to neutrality all the way to the high-order principles, which are usually grounded on substantive liberal values.

The third coordinate relates to an essential feature of Rawlsian liberalism: we understand the principle of neutrality as an exclusive political requirement. Thus, it is not meant as a general obligation extended to all citizens, but only to the state and its institutions. It governs the public, not the non-public.³ At this point, it might be argued that the decision to include or exclude a given subject-matter from the school curriculum is not a political issue. I would disagree. Notice that the real-world controversies over this topic have been stirred from court rulings, legislative issues and administrative instructions, either from centralized (e.g. ministries of Education) or decentralized (e.g. school boards of education) public bodies. After all, we are referring to compulsory education with mandatory school curriculum. To the extent that the mandatory curriculum covers the minimum content that is obligatory to both public and private schooling, even the latter is not fully exempted from the demands of neutrality. In all of these cases, the question of neutrality arises precisely because the state is employing its coercive resources and individuals are bound to comply. Hence, I argue, important definitions regarding the curriculum fall within the jurisdiction of the political. Usually, the scope and content of the mandatory curriculum are unproblematic; we normally take these for granted. But this has not been the case in sensitive areas for both parents and children alike, from sexual education to religious studies through life sciences. In turn, the question of neutrality does not arise when these discussions run in what Rawls called the background culture. Parents might still want to take their children to the Sunday assembly to

³ As explained by the legal philosopher Jeremy Waldron, “the requirement of neutrality is generally taken to be specific to political morality. It is not wrong for someone to favour a particular conception of the good life, but it is wrong for her in her capacity as legislator (and presumably as voter) to favour such a view. Unlike courage or honesty, neutrality is not a virtue whose estimation in the case of political actors is explained as a special case of its estimation in the world at large. It is a specifically political virtue. There is something special about political life that makes us require this of those involved in it” (1989: 70-71).

learn about creationist views. No duty of political neutrality falls on them.⁴ Further, for the strict purposes of this work, we care about institutional neutrality or *macro-neutrality*, and not pedagogical neutrality or *micro-neutrality*. The former is exhausted with the political justification of the science curriculum. It does not extend to the actual practice of teaching biology or to the wide range of pedagogical strategies recommended to deal with difficult issues within the classroom. Therefore, I will not be assessing the factual possibility or even the normative desirability of neutral teaching as such.⁵

Finally, a last core coordinate of much of the liberal literature on neutrality focuses on whether this commitment should be extended to the effects of a given state action. Most philosophers in this area -defendants and critics of the notion of neutrality alike- agree that it does not (Kymlicka, 1989; Jones, 1989; Rawls, 1993; Sher, 1997; Barry, 2001; Quong, 2011; Patten, 2012). Only a small minority of political theorists suggest that neutrality should be about how diverse worldviews or lifestyles are likely to succeed in a similar manner after governmental intervention (Montefiore, 1975; Raz, 1986). So, the clear majority thinks that the crucial requirement for a law, policy or judicial decision to be regarded as neutral in the relevant sense is that its intention, reason, aim or justification can be presented as fair and non-biased. Such a policy, law or judicial decision will eventually have varied consequences for the population. For some, these will be adverse. For others, these will be most welcome. For the rest, perhaps, these will be innocuous. But political liberalism, as the apparent consensus indicates, should not be embarrassed by those uneven consequences to the extent it did not promise to be neutral at the level of outcomes in the first place. Indeed, it cannot be. Recall the feature of instrumentality: those allegedly neutral policies and decisions were put in place in the name of a high-order principle. Such a principle does not single out any

⁴ The political theorist Matthew Clayton has expressed a different view. He believes that parents should abide by the same principles of legitimacy and ideals of 'neutral' public reason as governments. This requires them "to bring their children up according to principles that do not depend upon controversial beliefs about religion" (Clayton, 2006: 3). Thus, Clayton aims to re-signify the feminist slogan 'the personal is political'. The 'parental', Clayton goes on to argue, "is in various relevant respects 'political' and, therefore, parents should regard themselves as duty bound to respect their children's autonomy by not enrolling them into ethical practices the worth of which is disputed by reasonable persons" (2006: 5). In which respect is the relation between parent and child 'political'? To Clayton, "it is a non-voluntary coercive relationship that has profound effects on the child's life prospects and her self-conception" (2006: 93-94). Though I am sympathetic with Clayton's overall project in the sense that there are good autonomy-based reasons to require parents not to insulate their children into closed religious or ideological compartments, for the time being my aspirations are more modest. Here I am following Rawls -who stated that political principles do not apply directly to the internal life of the family- in considering that the Sunday assembly will be out of political bounds in a way the school curriculum will not.

⁵ For a combined approach to both the normative discussion and the practical teaching over evolution and creationism, see Greenawalt, 2005: Ch. 8, 9 and 10.

group to be especially burdened beforehand. Hence, no injustice is perpetrated if different groups are differently burdened by the neutral application of the principle. Therefore, claims insisting that liberal institutions should ensure neutrality of outcomes will be misplaced.

This caveat about the normative limitation of liberal neutrality has obvious implications for the debate we are addressing. It means that the promise of liberal neutrality does not depend on the effects of the decision. More specifically, the fulfilment of liberal neutrality is not necessarily compromised by the empirical fact that many children might grow up believing in a naturalistic version of evolution, or even became atheists in the same way as Richard Dawkins did when he discovered the force of Darwinism.⁶ Thus, the question is not whether evolution and creationism should be awarded equal treatment having in mind all the possible effects of such an educational policy –for example, by teaching that both are equally plausible or equally provisional or equally conditional- but whether the decision over the right amount of time that each theory deserves -if any- was adopted following fair and unbiased rules that embody high-order liberal principles. I will come back to the legitimacy of uneven outcomes by the end of this chapter.

2. Non-Adjudicative Neutrality.

Following Nagel, this work claims that the assumption that supernatural primary causation - to be distinguished from secondary causation- can never be addressed by scientific means is not in itself scientific but rests on a philosophical or metaphysical prior belief: that either supernatural forces do not exist or supernatural forces do not intervene directly in the physical world. Indeed, most of scientists believe that disembodied entities do not act upon spatiotemporal reality or simply that they do not exist.⁷ This is a premise that cannot be

⁶ In his recent memoirs, the British ethologist relates that his own adolescent religious frenzy came to a stop when he found out about Darwin: “I became increasingly aware that Darwinian evolution was a powerful available alternative to my creator god as an explanation of the beauty and apparent design of life... I went through a period of doubting the power of natural selection to do the job required of it. But eventually a friend persuaded me of the full force of Darwin’s brilliant idea and I shed my last vestige of theistic credulity, probably at the age of about sixteen. It wasn’t long then before I became strongly and militantly atheistic” (2013: 142). Dawkins’ biographical testimony is precisely the kind of intellectual experience that creationists fear for their children.

⁷ Nine out of ten evolutionary biologists are nonreligious or straightforward atheists (Bergman, 2010). Most scientists believe that it is highly unlikely, if not completely far-fetched, that an all-powerful nonphysical being intervenes creatively in the world. Thus, Nagel remarks that, “this way of drawing the boundaries around

accounted for scientifically. Accordingly, MN has been targeted as a strategy that attempts to rule supernatural hypotheses out of science by “philosophical fiat” (Boudry, Blancke and Braeckman, 2012). Suddenly, a seemingly innocuous methodological presupposition reveals itself as a metaphysically-loaded assumption that favours either provisional atheism, deism or watered-down theism.

Two important and related points should be reiterated here. Firstly, we are presuming that the kind of metaphysical claims involved in this debate are indeed relevant for the cogency of traditional theistic doctrines. Many religious believers consider that the personal attributes of their God are inseparable from His capacity to act in a subtly but rationally detectable way throughout nature and matter. Moreover, for a respectable number of the faithful communities, a hands-off deity is as good as a useless deity. For theists of this kind, a principled version of MN deprives them of the possibility of recognizing their God through His deeds. Consequently, MN is judged to be arbitrarily biased against their overall religious narrative. Thus, in the last chapter we concluded that an official policy of *a priori* exclusion of hypotheses characterized as supernatural, paranormal or religious from the purview of science is problematic given its failure in terms of liberal neutrality.

Secondly, we are also considering the place of distinctive cultural influence that the scientific narrative enjoys in contemporary technological societies. As reviewed, advocates of the NOMA thesis seem to advise religious citizens to abandon the scientific turf altogether. But such a resignation strategy is not available in many theistic quarters. An overwhelming majority of citizens in liberal democracies acknowledge the power of science as a capacious and trustworthy knowledge-generator. Science cannot be just depicted as a sterilized set of mechanic methods. Science should also be recognized as a cultural tool for the communication of reliable knowledge through generations. The battle over education is of pivotal importance because the school system operates as the ultimate transmission device. This is the nub of the creationists’ argument: if supernaturalism is ruled out from the purview of science but science is still perceived as the legitimate source of trustworthy knowledge in a domain -the factual- that has relevant implications for their worldview, then they are entitled to claim that they are treated with less than equal respect. Put differently, if the scientific project is inextricably linked to the default presumption that the physical world can be satisfactorily accounted for with God playing no role, creationists might have a fair point

science [MN] depends... on the unspoken assumption that all such propositions [of supernatural agency] are obviously false” (2008: 1983).

in arguing that such a project is almost imperceptibly but systematically biased in favour of naturalistic conclusions.

Thus, the political conundrum is exposed. On the one hand, metaphysical beliefs are relevant to the articulation of comprehensive doctrines. On the other hand, political liberalism has promised to remain neutral regarding the (reasonable) comprehensive doctrines that coexist in a pluralistic society. Therefore, to honour this promise, liberal institutions should not take sides regarding metaphysical claims, even when they are subtly embedded in a methodological proviso. To sum up this view:

- i) A principled version of MN is metaphysically loaded.
- ii) Metaphysical beliefs are part of the structure of a comprehensive doctrine.
- iii) The liberal state should remain neutral regarding comprehensive doctrines.
- iv) Thus, liberal institutions should not embrace any principled version of MN.

Therefore, my claim is that no state-sponsored pronouncement should endorse the argument for MN. Otherwise, political liberalism is abandoning its commitment to metaphysical impartiality. We treat citizens and their religious beliefs with equal respect when state institutions make no prior assumptions about the kind of causes that might have a physical effect on the world. Hence, from the standpoint of liberal neutrality, naturalistic and non-naturalistic claims about the relation between causation and factual reality should be regarded as standing on a symmetrical footing. Regardless of its naturalistic or non-naturalistic character, no hypothesis should be *a priori* preferred or excluded.

Instead of supporting the standard liberal endorsement of MN, this work proposes an arrangement that does not exclude any hypothesis from the scientific project by “philosophical fiat”. According to this arrangement, the liberal state fulfils its promise of neutrality by avoiding a decision on which metaphysical assumptions should reign over the human endeavour to acquire reliable knowledge about the factual world. This strategy is embodied in what I call the model of non-adjudicative neutrality (NAN). Under the NAN, governmental bodies should refrain from issuing binding judgments. As such, this model constitutes a specific form of *not taking sides*. We might qualify it as a negative form of neutrality. The distinction between a positive and a negative side of neutrality was advanced by the political philosopher Peter Jones. To Jones, “negative neutrality” is the kind of neutrality usually associated with international conflicts. Here, an actor is neutral when it “refrains from seeking to advance the cause of either part to the conflict” (Jones, 1989: 18).

Thus, the notion of negative neutrality stands for the idea of non-intervention. The neutral actor is not expected to resolve the conflict in any way, nor even to set the conditions for its resolution. Its inactivity signals its neutrality.

This model should be applied when a high-order principle would be better served by remaining silent on a given controversy. In our case, the controversy involves competing metaphysical beliefs about the plausibility of God's agency. The high-order principle establishes that political liberalism should treat people's ultimate commitments with equal consideration. Thus, the high-order principle commands liberal institutions to treat those beliefs in a neutral way. Here, NAN means that the liberal state commits its education system to remaining silent as to which metaphysical positions are compatible with the findings of science as they are currently best warranted.

To sum up, when it comes to setting the boundaries of science for the purposes of compulsory education, liberal institutions cannot issue a decision implying that one metaphysical assumption is more likely than the other -which is precisely the case with any principled version of MN. Neutrality is always related to a situation in which the success of one party sets the other back. If the liberal state endorses MN, the theistic party is being -although perhaps very subtly- disadvantaged. As appealing to a principled version of MN is at odds with the metaphysical presuppositions that many theistic believers hold regarding a set of relevant factual questions, neutrality *requires* a non-adjudicate stance. To do otherwise would amount to penalizing those who believe in supernatural intervention by telling them that their views are simply not allowed to compete for the best overall explanation. Thus, the NAN model rejects any official attempt to demarcate science whenever the proposed criterion entails an imbalance between assumptions about the ultimate nature of agency and causation. Philosophically speaking, there is no neutral argument to rule out supernatural possibilities in principle. If we rule them out from the outset, we are taking sides. Accordingly, the liberal state should be blind to this meta-scientific debate.

To clarify, normative blindness is not the same as agnosticism. In my understanding, agnosticism constitutes another position on the metaphysical scale. So, agnosticism does not work as an Archimedean point for political liberalism to adopt. It is not the case that state institutions should embrace NAN since they *do not know* the answer to these metaphysical dilemmas. It is rather that, like the neutral actor in the international conflict scenario, liberal institutions do not enter those waters.

This preliminary conclusion can raise some expectations in the creationist camp. After all, the rejection of MN implies that theistic claims should be habilitated to compete as scientific hypotheses. In a phrase, political liberals cannot dismiss SCR and remain neutralists in the relevant sense. This goes beyond the CC. Perhaps supernatural hypotheses should be re-incorporated in the field of astrophysics and cosmology, whereby materialistic understandings could be complemented by theories such as the divinely ordained fine-tuning of the universe. The NAN model will certainly be greeted in those theistic quarters that seek evidence of a super-intelligent hand in the operation of quantum physics. Others might want to take advantage of the research possibilities that NAN opens up by introducing non-naturalistic alternatives to the prevailing evolutionary story about human conscience. Finally, as many people believe that Darwinism has not yet offered a complete and accurate description of how non-organic life turned into organic life in the primeval soup, the application of the NAN model entails to accept supernatural hypotheses aimed at answering the same question. Are we compelled to introduce these claims in the scientific curriculum, since we have allowed a “divine foot in the door” in the name of liberal religious neutrality? Not necessarily. To this I turn in the next section.

3. Demarcation Revisited.

Chapter IV showed that the intellectual project to set the disciplinary boundaries of science was a controversial one. There, we pointed out that the traditional demarcation attempts were vulnerable to objections of a different character. However, we suggested that the difficulty of establishing the boundaries of the scientific project does not imply that everything goes when it comes to doing science. While this work asserts that the supernatural character of a hypothesis is not the determining factor in qualifying its scientific credentials, it also claims that science contains certain guidelines to adjudicate on the quality of competing hypotheses. In other words, the fact that creationist accounts might be considered in the quest for the best factual explanation does not imply that they will be included in the list of proficient scientific theories, or in the scientific curriculum for that matter.

In recent years, a growing body of philosophers of science have come to criticize what Phillip Kitcher has called the “status claim”, which is the claim that the scientific status of a given hypothesis depends on whether it invokes supernatural causation or not. For Kitcher, the

“status claim” has little utility as a watershed criterion. If there is no place for ID in the biology classroom, Kitcher argues, it is because it is “a doctrine that once had its day in scientific inquiry and discussion, but that has rightly been discarded” (2007: 8). Thus, its eventual exclusion is not dependant on the fact that it suggests the action of a super-intelligent mind. Kitcher advises dropping MN to the extent that “any right to dismissal cannot be assumed at the outset –instead, it must be earned” (2007: 11). In the same vein, the neuroscientist Yonatan Fishman has stated that “claims should be excluded from science education when the evidence does not support them, regardless of whether they are designated as *natural* or *supernatural*” (2007: 813). To Fishman, the crucial question is whether there are good reasons to believe that a given claim is true. Although evidence in favour of supernatural claims tends to be elusive –and I shall say something about that- Fishman’s case is that, at any rate, naturalism should not work as a methodological presupposition but rather as a tentative conclusion. The philosopher of science Keith Parsons has argued that we should concede, at least in principle, “that supernatural hypotheses could be evaluated scientifically” (2005: 165). Of course, Parsons believes that science should not presuppose naturalism as a metaphysical dogma, but neither as a methodological requirement. He draws attention to the historical fact that Darwin himself did not appeal to metaphysical or methodological naturalism in order to reject theories of special creation, but beat them “in a fair fight vis-à-vis the empirical facts” (Parsons, 2005: 166). Like Kitcher, Parsons holds that creationist hypotheses are not being “arbitrarily dismissed”, but on the contrary, that “they have received extensive, careful, detailed empirical scrutiny -far more attention than they deserved, in fact” (2005: 166). Nagel’s view should be understood in the same discursive frequency. Recall that Nagel does not argue that we ought to include ID within the science curriculum in the name of metaphysical neutrality. He recognizes that we might still exclude ID because it is scientifically mistaken. After all, he suggests, “a scientific hypothesis can be false and unsupported by the evidence. That is a good enough reason not to teach it to schoolchildren. It is not necessary to argue that it is not science, not even hopelessly bad science” (Nagel, 2008: 196).

An important point should be made here. To state that supernatural hypotheses cannot be banned from science *in principle* does not solve the scientist’s difficulties to trace them *in practice*. Some authors have tried an operational conceptualization of the supernatural. Boudry, Blancke & Braeckman define the supernatural as “processes and causes that transcend the spatio-temporal realm of impersonal matter and energy, and to phenomena arising from the interaction of those entities with the material universe” (2012: 1152). Is it

possible to detect such processes, causes and interaction? Evan Fales replies that “imagining clear evidence for the miraculous is not that hard” (2013: 251). Indeed, it is not impossible to think about detectable alterations of patterns of natural causality for which we have no material explanation available. In other words, if new data are consistently pointing to events that can hardly be explained within a naturalistic frame, intellectual honesty compels us to acknowledge such an anomaly. In Victor Stenger’s terms, anything that can be shown to violate our fundamental notions of material processes or to have properties different from those long associated with matter “would be of such world-shaking significance that, for want of a better term, we would call them supernatural” (2007: 16). In this spirit, Fales asks what would be wrong with science if it points towards a supernatural explanation in cases in which we have established “with reasonable certainty that an event has no sufficient natural cause” and it can be argued that such an event “is the sort of thing that a god could and quite possibly would cause” (2013: 251). As the philosopher Theodore Schick Jr. has argued, “the supernatural can be known by its effects just as sub-atomic particles can” (2000: 37). Schick goes on to assert that “if the supernatural exists, it’s real, and if it’s real... it can be investigated scientifically” (2000: 37). Most realistic theologians agree with this.⁸

It could be argued that all of this is simply untrue in real scientific practice. Indeed, it would be strange to find many physicists, chemists or biologists that contemplate natural and supernatural hypotheses as equally probable when conducting their research. But the fact that scientists always look for naturalistic explanations and very rarely for supernatural ones should not be described as a principled commitment but rather as a practical or provisional stance, justified by the enormous fertility of the former and evidential poverty of the latter. It is, then, a consideration emerged *a posteriori* rather than an *a priori* pledge. Again, the practical problems of the supernatural as proficient scientific hypotheses should not be conflated with their principled impossibility. Thus, Boudry, Blancke & Braeckman distinguish between “Intrinsic Methodological Naturalism” (IMN) and “Provisional” or “Practical Methodological Naturalism” (PMN), and decide on PMN as the correct approach. The conceptions are, in the end, different: “either one defends PMN, implying that supernatural explanations might have succeeded, or one chooses IMN, which is to rule them out of science a priori” (Boudry, Blancke & Braeckman, 2012: 1159). A similar formulation

⁸ As Fales recalls, “almost all of natural theology is concerned with assessing the empirical evidence for and against the existence of such a being, on the basis of his presumed effects on the world. There is thus... no reason in principle why supernaturalistic hypotheses could not figure as eligible for scientific investigation” (2013: 254).

has been articulated by Evan Fales, who has criticized the reasoning in *Kitzmiller vs Dover* on the same basis. Although Fales acknowledges that it is highly unlikely that a naturalistic explanation “is chased from the field by a triumphant supernaturalistic one”, he asserts that, at most, this yields a “practical counsel to look preferentially for naturalistic explanations of puzzling phenomena” but nothing like the “principled dictum -let alone a prejudice- to the effect that the supernatural cannot possibly explain anything” (2013: 259).

For the purposes of our research, another way to think about demarcation possibilities is to distinguish between *territorial* and *normative* boundaries. Territorial demarcation, according to the conceptualization offered by Maarten Boudry, “is concerned with a classification of knowledge, or a division of labour between different disciplines, and not with epistemic warrant per se”, while normative demarcation “adjudicates between theories or practices we should rationally accept and those to which we should not grant any credence” (2013: 81). Hence, territorial demarcation points to exclusive epistemic jurisdiction for each field of knowledge. NOMA is a paradigmatic case. Supporters of the NOMA theory endorse the idea that science and religion are two separate teaching authorities. By extension, any speculation about natural and supernatural causation should also run on parallel channels. As such, the natural vs. supernatural distinction on which intrinsic MN is built is an expression of territorial demarcation. In turn, normative demarcation appeals to a standard of epistemic desiderata. To the normative criterion, magisterial adscription does not determine scientific proficiency. This understanding is consistent with the intuition that we have been channelling throughout this work: that sometimes it is just too difficult to disentangle philosophical arguments from scientific theories. As Boudry remarks, “territorial demarcation is complicated by the problems of interdependence and continuity” (2013: 82). Although it might be appealing to think of science as “metaphysically innocuous, safeguarding a special domain for supernatural speculation where science is impotent, and thus establishing a *modus vivendi* between science and religion” (Boudry, 2013: 84), such a *modus vivendi* is achieved at a high intellectual price -nothing less than the quest for overall truth- that many theologians and scientists are not willing to pay. These problems are avoided if we take the route of normative demarcation.

The demarcation problem has often been identified with the reasonable aspiration to separate the wheat of science from the chaff of pseudoscience. Most people think that the latter cannot enjoy the same epistemic status as the former. Thus, once a claim has been labelled as pseudoscientific, it appears all too evident to expel it from all the spaces reserved

for science. If we can safely say that creationism and ID theories are pseudosciences, their exclusion from the compulsory science curriculum follows. However, I have consciously averted the pseudoscientific tag to refer to them. This is because it is not entirely clear whether the science vs. pseudoscience distinction overlaps with the territorial or with the normative demarcation criteria. If suggesting supernatural agency suffices to consider a given claim as pseudoscientific, then we are employing a territorial criterion. But I have already challenged the principled assumption that supernatural claims cannot be assessed through scientific means. Indeed, the label supernatural is a red herring that prevents us from focusing on the qualities that distinguish good from bad scientific hypotheses. From the standpoint of normative demarcation, a pseudoscientific theory is a claim that lacks the qualities of a proficient theory. There is not an exhaustive list of these qualities. But we can contribute some ideas: clearness instead of vagueness, openness to criticism instead of self-immunization of theories, explanatory unification instead of fragmentary targets, a positive account of how things happened instead of a purely negative account of how they did not, etc. In this sense, the problems that afflict ID creationism are far from exclusive or intrinsic to hypotheses that suggest supernatural intervention.⁹

Thus, the criterion that seems to do most of the work here is a sense of empirical and speculative rigour that amounts to epistemic warrant, and not territorial belonging. Pseudosciences are alike in their explanatory weakness and ineffectiveness. From a normative demarcation perspective, creationism can be joined by astrology, homeopathy, Lysenko's pro-soviet biology or iridology, to name just a few. The supernatural factor is superfluous. To put it differently, here religion is not special. With Boudry, I argue that creationism invokes supernatural entities and at the same time "is guilty of a host of pseudoscientific sins" but "the two issues should not be conflated" (2013: 94). This distinction is crucial to our argument. Since we are not grounding the exclusion of creationism from the science curriculum on the natural vs. supernatural divide, we are respecting NAN and liberal fairness can rest safe. But, as it is "guilty of a host of pseudoscientific sins", its exclusion might be highly advisable nonetheless. To this I turn in the next section.

⁹ As Martin Boudry puts it, "ID creationists steadfastly refuse to reveal anything about the mechanisms and procedures used by the alleged designer, insisting that his motives are inscrutable and that the whole affair is beyond human comprehension. Note that this stalemate does not derive from the supernatural character of the hypothesis, as there is nothing that prevents ID creationists from fleshing out their design hypothesis in such a way that it actually yields specific predictions... it is the resort to such ad hoc manoeuvres and the refusal to flesh out one's hypothesis that makes a theory like ID creationism pseudoscientific, not the appeal to a supernatural cause per se" (2013: 89, 90).

4. **Procedurally-Adjudicative Neutrality.**

So far, our claim is that no officially sanctioned notion of science should discriminate between naturalistic and non-naturalistic hypotheses, fundamentally because liberal institutions should not discriminate about their metaphysical prior assumptions. Under this institutional arrangement, what counts is the proficiency of the hypotheses presented. Thus, this work argues that political liberalism is incompatible with any principled dictum of MN but not incompatible with a practical or prudential version of MN. At the same time, it claims that political institutions cannot rule out supernatural hypotheses from the science curriculum based on a theory of territorial or *magisterial* demarcation, but they are warranted to exclude them if this is done in accordance with a theory of normative demarcation. Therefore, creationist accounts such as ID might be rightfully discarded from the science curriculum when their explanatory power and evidential support has proved to be scarce. This seems to be the empirical case: as far as the scientific consensus go, creationist accounts pale in comparison with the Darwinian framework when it comes to making sense of the variety of species roaming the Earth.

The problem with creationism, in a nutshell, is not that its claims are pseudoscientific or not scientific at all because of their supernatural dependency. The problem is that the claims of modern-day creationism represent superseded science. There was a time in which the general argument from design was commonly accepted. That is another advantage of adopting a normative criterion of demarcation: it allows the boundaries of science to be flexible depending on the emergence of new knowledge. In the future, better theories will supersede current ones. We cannot rule out that this could be the fate of evolutionary theory. But in that case, the fact that Darwinism appeals to pure natural mechanism will be entirely irrelevant. Recall that Darwin himself was explicitly aware of the features that could refute his theory. Drawing on Darwin's fears, the creationist biochemist Michael Behe was confident that his challenge of irreducible complexity could dethrone naturalistic evolution. It did not. But it is not impossible to think that it could have done so. Going further, it might be the case that bizarre theories that attempt to explain the appearance of humanity by pointing to alien intervention will be revealed scientifically correct in the long run. However, and for the time being, Darwinian evolution is by far the best theory at hand. Again, that status is not dependent on its naturalistic character. Despite its remaining unsolved problems,

orthodox evolutionary theory has resisted every revision and has usually emerged strengthened. Darwinism deserves to rule within the biology module not because science is dogmatically materialist but because science sticks with the best explanations available.

It seems sensible to distinguish between proficient and explanatory poor scientific attempts, specifically when it comes to adjudicating in the curriculum debates. Here, the adjudicatory necessity is reinforced by two elements. On the one hand, time is an obvious constraint. Not all scientific claims can be presented. In the context of an already very compressed mandatory curriculum, it would be odd to reduce the time given to competent theories to make room for those which have clearly been superseded. On the other hand, most of these curricular debates are premised on the idea that societies have a responsibility to communicate reliable knowledge to the next generations. The aim seems to be to provide them with an accurate picture of the world. Thus, teaching good and bad theories as equally trustworthy amounts to educational negligence. I will further develop the connection between liberal aims and science education in the next chapter.

To honour its promise of religious neutrality, liberal institutions should then treat the evolution vs. creation controversy as a disagreement between claims about the factual world. Their religious or nonreligious inspiration is, at best, secondary. It might provide interesting sociological insights, but it cannot settle the normative debate. As presented in this chapter, the NAN model recommends adopting a broad understanding of science to avoid taking sides regarding opposite metaphysical assumptions, but delegates the resolution of what is to be taught in the science classroom to a subsequent adjudicative step. Creationism would be ruled out in the second adjudicative step and not prior to it. This means that we will arrive at the same conclusion as *Kitzmiller v. Dover* but appealing to different grounds. Creationists will not be satisfied with this move. They might insist that the only way to fulfil the promise of liberal neutrality is by allowing at least some room for ID or other hypotheses that dispute the naturalistic sufficiency of the Darwinian paradigm. After all, are we not mimicking fairness on the metaphysical level just to play unfairly on the next epistemic level?

My argument is that while metaphysical partiality will always be illegitimate in the face of liberal neutrality, political institutions are entitled to adjudicate between competing factual claims under certain conditions. Decisions around compulsory education are a case in point. Here, liberal institutions should not remain silent. On the contrary, we expect them to issue a resolution: they must indicate what should be included and what should be excluded in minimal curriculum. However, this adjudication should be understood as equally neutral,

though embodied in a different strategy. To this I call the model of Procedurally-Adjudicative Neutrality (PAN).

The PAN model comes into play when state institutions bear the responsibility of arbitrating between competing claims. This time, adjudicative neutrality performs the role of a referee or an umpire. A neutral referee, Peter Jones notes, is not one who steers clear of conflict or competition “for to be a referee is to occupy a particular role in relation to a competition - the role of interpreting and applying the rules of the game. A neutral referee is one who administers the rules in an even-handed manner” (1989: 19).¹⁰ This is corresponding to the notion that Jones described as “positive neutrality”. Here, “neutrality does not entail having no influence or impact upon a conflict or competition; it is a matter of ensuring that the rules of the game are observed in equal measure by both sides” (Jones, 1989: 19). Importantly, the negative and the positive are not different concepts of neutrality. The underlying intuition is the same. As mentioned, neutrality can take different forms in different contexts. In some cases, neutrality will be satisfied by “refraining from having any impact upon a conflict”, but in other cases “it can involve intervening in a conflict in a regulative role, though, to satisfy neutrality, that role must be neither designed, nor executed, so as to favour one side more than another” (Jones, 1989: 20).

Therefore, the adjudicative stage should be embodied in a fair arbitration mechanism. A procedure for adjudication is neutral in the sense that it is fair. That is to say, to the extent that it provides assurances to all interested parties that the adjudication will be arranged along predetermined rules that are not biased in favour or against any competitor. Crucially, these procedural rules are independent from any comprehensive doctrine. This is roughly the idea that Rawls had in mind when describing a neutral procedure, one that can be justified “by an appeal to neutral values such as impartiality, consistency in application of general principles to all reasonable related cases, and equal opportunity for the contending parties to present their claims” (2005: 191). These are the procedural values of fairness. We think about them as connected to higher-order principles of political liberalism. They are neutral in the sense

¹⁰ The allusion to the referee in a game as the embodiment of neutrality was already present in Montefiore’s account. “A neutral referee”, he contended, “will be one who works with the clear and well trained intention of helping or hindering either side in completely equal measure with respect to his application of the rules of the game...” (Montefiore, 1975: 9). However, I found this formulation odd. Indeed, a neutral referee might help or hinder each side -i.e. by calling a penalty kick- but it cannot be his intention to do it in “equal measure”. For prudential reasons, a referee who called an unjust penalty for team A might call another unjust penalty in favor of team B to help or hinder both sides in equal measure, as if it were a compensation. But that is not what the type of neutrality that I have endorsed here requires.

that they are fair to all, but liberalism is not supposed to be neutral between fairness and unfairness. In line with our argument, Rawls understood these values as regulating “fair procedures for adjudicating, or arbitrating, between parties whose claims are in conflict” (2005: 191). To sum up, the intuition underlying the PAN model is that impartial procedures can provide neutral justification for decision-making. For our purposes, the liberal commitment to neutrality is duly honoured if its institutions adjudicate between competing factual claims -say, to decide what should be included in the science curriculum- by following procedurally fair rules.

It might be noted that Rawls distinguished between the notion of *procedurally neutral ground* and the notion of *common ground*, but such a distinction fades in my account. This is because the procedural rules with which we usually associate the scientific method are aimed at an epistemic common ground. The pride of science rests on its alleged capacity to appeal to every rational person, regardless of their background, because its epistemic rules are theoretically shared. Most of the time, this epistemic common ground is constructed around an ideal conception of universally accessible evidence. I will further develop this important claim in chapter VII. Nonetheless, I do think it is important to anticipate a distinction between *common ground* and *commonly accepted views*. While the former works as an ideal epistemic standard, the second is contingent. This distinction is crucial in the evolution vs creation debate. In some countries, scepticism over Darwinism is widespread.¹¹ So, we might say that evolution is not a commonly accepted view there. However, our appealing to common ground has little to do with the effective acceptance of evolutionary biology. Instead, it points to the existence of legitimate adjudicatory rules in the scientific domain. Unlike religious revelation or personal experience, science aims to be justifiable from a more impersonal point of view. The ideal scientific project assumes that its evidence is mutually intelligible and epistemically accessible to all, regardless of ideological, national, ethnic, gender or religious sensibilities. If such is not the empirical case in a specific context, the normative claim stands: we are not looking for commonly accepted views but views that emerge because of an epistemic common ground.

All in all, this work recommends the adoption of a two-tier model of neutrality when it comes to dealing with competing factual claims, which is usually the case with scientific claims but

¹¹ The latest Pew Research Survey on the issue (2014) shows that 34% of the US population believe that humans and other animals have existed in their present form since the beginning of time. 61% declared that they believe that they have evolved through time. Among the latter, 34% accept the naturalistic version represented by Darwinism and 23% believe that evolution was guided by a supreme being.

it might eventually involve other sorts of factual claims, such as historiographic or geographical claims. The two-tier model of neutrality operates as follows: at the NAN level, political institutions should not rule out in advance religious hypotheses. Thus, in the case of the scientific contest for trustworthy knowledge and accurate representations of reality, liberalism is bound to accept supernatural claims into the competition. Then, at the PAN level, political institutions should run a blind procedure to decide on the plausibility of those claims. Simply put, metaphysical silence at the first level does not imply epistemic abstinence at the second level. Political liberalism is warranted to reject those claims that are found wanting *after* being subjected to the relevant epistemological filter. Such a filter is represented by a set of procedurally neutral rules for adjudication. Under this resolution-framework, the eventual exclusion of SCR would be due to their scientific failure in the normative sense of demarcation. As such, it amounts to no unfairness. Political liberalism remains neutral in the relevant sense insofar as it remains noncommittal to religion and nonreligion in both stages. At the NAN level, it does not discriminate against the theistic right to make sense of factual reality. At the PAN level, it does not care which theory -natural or supernatural- best matches the ontology of the world; it only cares that it does. Therefore, if ID or any other theory implying non-material agency can put forward a case with enough evidence on its side, liberal institutions would have to recognize it. Perhaps, other educational conditions provided, they might merit inclusion in the science curriculum. Until such a case is made, however, they are rightly excluded on procedurally neutral grounds. The epistemic side of the CC fails in the end.

5. Uneven Outcomes.

Although the intention of science is never to advance or hinder religious or metaphysical beliefs as such, its conclusions can arguably have an impact on them. This is obviously true when scientific conclusions are contrasted with scriptural versions, but it might also be true against the background of more general religious conceptions. As we reviewed in Chapter II, this thesis holds to the argument that evolutionary Darwinism can configure a partially comprehensive world-picture that is hard to square with certain theistic narratives. If such an argument is persuasive, then we can end up with a neutral procedure -as embodied by the PAN model- that still yields to a philosophically loaded conclusion. Recall Fishman's remarks about naturalism not working as a methodological presupposition but rather as a potential

outcome of scientific research. If that is the case, creationists might want to reject the PAN model because of its uneven consequences and instead promote an institutional arrangement that ensures that competing worldviews enjoy the same chances of success in the cultural marketplace. After all, their fundamental problem is not with the reasons that grounded the *Kitzmiller v. Dover* verdict, but with the decision itself: that ID was banned from the school curriculum. The whole point of creationists of different kinds is that a purely naturalistic teaching about the origins of humankind will *nudge* young minds into degrees of disbelief. As these religious communities cherish the view of a hands-on deity, the non-providential picture offered by Darwinian natural selection might result in a progressive shift away from traditional theism. This would constitute an insufferable defeat in the cultural war against godless materialism, as they see it. The spokespersons of New Atheism do not deny that Darwinism can have such an effect; in fact, they appear to celebrate it. However, the empirical point has not been settled: it is unclear the degree to which the teaching of mainstream evolutionary biology operates as an intellectual stimulator for atheism, deism or -as Nagel called it- *theistic noninterventionism*. Recent research has shown that the kind of scientific instruction received by children is correlated with their overall metaphysical view (Hanley, Bennett, and Ratcliffe, 2013). What is uncertain is whether such a correlation also indicates a causal relation, or whether it just reflects familial (religious or nonreligious) prior beliefs. In any case, the concern stands: creationists are justified in fearing that -because of Darwinism- their children might grow up with a view of the physical world in which no supernatural entity is truly needed to account for material processes as important as the appearance of human beings.

This being the scenario, creationists will be unable to revert such misfortune through the two-tier model of liberal neutrality. As explained at the beginning of this chapter, liberal neutrality is not concerned with the uneven effects that take place because of its application. At one level, it exhausts its duties to fairness by allowing SCR to compete next to purely naturalistic hypotheses. At the second level, by adjudicating on the scientific plausibility of such competing claims using an epistemically neutral filter. After both stages, we will probably find ourselves with the conclusion that only Darwinian evolution must be taught, and at the same time we will be unable to ignore the philosophical, religious and morally controversial implications that we have already sketched. In other words, political liberalism might fulfil its promise of neutrality through the two-tier model advocated in this chapter, and still be perceived as unfair by creationists because of its uneven effects.

I shall suggest -in the final thoughts of this thesis- that this is an inescapable problem. Once we have agreed on a shared epistemic filter to adjudicate controversies regarding factual claims, its conclusions should be taken as politically legitimate, even if they remain controversial at a more comprehensive level. For now, I will mention two possible moves to soothe the creationist plight. The first one is to insist that religious people should simply cope with the fact that some scientific theories might bear disturbing implications for their faith. Among others, Martha Nussbaum has noted the undeniable fact that “religious people have many ways of making sense of the totality of their beliefs, and have since modern science began” (2008: 326). So, they must accommodate their religious views to the science of their day. Literalist groups will find this utterly hard. It should be less complicated for moderate believers. The latter might want to restate their creed in terms of divine causation through purely secondary means. For some theological understandings, this strategy should not represent any meaningful loss. But even for moderate believers it could be problematic to observe the way in which science delimitates the outlines of the religious discourse in terms of its rational plausibility. It is the religious person who is usually forced to accommodate, not the other way around. In any case, metaphysical additions are allowed in the realm of personal belief. Outside public education, communities are free to inculcate their children with other ideas about the meaning of the universe, the history of the world, and the cosmic place of humankind. Creationism might be ruled out in the curriculum debates, but it is not banished from non-public social life.

A second possible answer points to the fact that, as it stands, political liberalism is indifferent to the metaphysical character of scientific conclusions.¹² Thus, the admission of non-naturalistic theories at the NAN level is fundamental because no relevant injustice is perpetrated when SCR *could* have been qualified as the best explanations. If they did not, it is not liberalism’s fault. The duties of political liberalism are thus exhausted with the proposed two-stage model of neutrality. To insist, the crucial argument is that the PAN stage *could* have ruled in favour of a supernaturalistic reading of physical causation. In such a case, religious communities would not have been very worried about the prospects of cultural flourishing of their materialistic rivals. In other words, the appealing to neutrality of outcome seems to be motivated by the fact that they are losing ground, and not because there is

¹² As Montefiore stated when presenting the idea of a neutral referee, “it is a matter of complete indifference to him *qua* referee whether it is one side or the other that has incurred a penalty... an un-neutral referee, on the contrary, would be one whose actions were calculated to help one side at the expense of the other” (1975: 9). The fact that the referee may know which competitor is stronger in advance does not alter his neutrality.

anything inherently wrong with the adjudicative epistemic filter. I will come back to this point in chapter VII. The relevant question, from the standpoint of political liberalism, is not whether faith-based communities are being incidentally disadvantaged by the effect of mainstream scientific instruction, but whether they are being unfairly disadvantaged by it.

Now, two relevant objections could be raised. On the one hand, it might be said that, since Darwinism is a (partial) comprehensive doctrine, and liberalism should reject the imposition of alien comprehensive doctrines on children whose parents have a different worldview, liberalism should reject the compulsory teaching of Darwinism. On the other hand, it could be argued that the filter that liberal institutions use to adjudicate between competing factual claims is not really neutral but is in fact as controversial as any other sectarian epistemological filter. Therefore, it will not work for the purposes of ensuring liberal legitimacy. To these two objections I turn in the next two chapters.

Summary

Throughout this chapter, we have shown that the political decision to exclude supernatural hypotheses from the purview of science by *philosophical fiat* is not warranted by the liberal principle of neutrality, but the inclusion of supernatural hypotheses in the actual curriculum is anything but guaranteed from same principle's perspective. Thus, liberal political theorists are wrong to rest on a principled version of MN as a way of ensuring neutral treatment, whilst creationists of different sorts are wrong in requiring effective even-handedness in the classroom as the only way to honour liberal impartiality.

In turn, we have suggested the application of two-tier model of neutrality. At the first level, political institutions should refrain from adjudicating between different sources of causation when it comes to characterizing science because such adjudication would imply a philosophical assumption that is difficult to reconcile with religious neutrality. At the second level, when political institutions have the duty to adjudicate between competing factual claims -as is often the case with curriculum debates- they must do so by following a procedure that can be recognized by all parties as impartial and non-biased, and therefore neutral. Therein lies the role of the scientific method, to which the natural vs. supernatural discussion should not be relevant as a demarcation criterion for political purposes. If any, demarcation should be drawn along the normative qualities that we expect for a proficient scientific theory to exhibit.

Finally, the two-tier model of neutrality might end up producing uneven outcomes. This is most probably the case in the evolution vs. creation debate. Even without dismissing SCR at the outset -because of NAN- creationism can be still judged to be scientifically inferior to Darwinian evolution -because of PAN. In that scenario, it will not get into the science curriculum. However, liberal neutrality is not to be blamed.

VI

Creationism under the Veil of Ignorance

The Original Position Strategy

The task ahead is to provide a systematic justification for the adjudication that political institutions carry out to resolve between competing factual claims. In other words, we are looking for publicly shared standards that allow us to affirm that political decisions - in this case, curricular ones - are arrived at in a fair and legitimate fashion. Two justificatory devices have been prominent in contemporary liberal literature. The first is the contractarian hypothesis described by John Rawls in *A Theory of Justice* (1971). The second is the idea of public reason that Rawls put forward in *Political Liberalism* (1993) and elsewhere¹. In the next chapter, I will examine whether the scientific standard employed to exclude creationist accounts from the curriculum can be matched with the requirements of liberal public reason. In turn, this chapter investigates what type of (scientific) education are children in a liberal polity entitled to if the question is framed in the spirit of the Rawlsian original idea of justice as fairness. I call this the Original Position Strategy (OPS).

This is the democratic conundrum: a considerable portion of parents and guardians oppose mainstream scientific teaching insofar as they deem it to be antithetical to their own beliefs. Replying that scientific conclusions should not be taken as value-laden will not ease their concerns. As we have argued, it is possible to trace a specific kind of continuity between the realm of facts and the realm of values. For many parents, creation stories are not anecdotic but constitutive of their overall religious narratives.² This opposition grows understandably stronger when they are funding the school system with their taxes. Thus, the philosopher of

¹ According to T. M. Scanlon (2003), Rawls's rich work offers three paradigmatic ideas of justification: the method of reflective equilibrium, the derivation of principles from the original position, and the idea of public reason. I will not be treating reflective equilibrium here.

² As philosophers of education Bryan R. Warnick and C. David Foose acknowledge when discussing the teaching of creationism in schools, "one does not have to accept the creationist argument to acknowledge that stories of human origins strongly connect to what we ultimately believe about ourselves and our place in the universe... such stories are a central part of nearly every major religion... such accounts appear to be integral features of religious belief" (2007: 361). This is especially true for Christian fundamentalism. John and Henry Morris have asserted that "only in Genesis 1:1 (the foundation of all foundations!) is there a statement of the creation of the universe itself. Without this foundation, true religion is impossible" (1996: 114). But it is also relevant for non-fundamentalists: even if Genesis should not be read as scientific tale, the Biblical scholar B.K. Waltke (1991) has emphasized the centrality of the creation narrative for all Christianity.

religion Alvin Plantinga has claimed that, under the conditions of a fair agreement, parties to the social contract would sign up for a right to prevent their children from being taught comprehensive beliefs that are contradictory to their own. The argument, as we shall see, leads to the “modest proposal” that neither Darwinian evolution nor creationism should be taught as the settled truth, but only *conditionally* to the parents’ religious or philosophical backgrounds.³

This chapter aims to assess Plantinga’s Rawlsian argument, as he describes it. If Plantinga is right, then evolutionary theory cannot be forced onto students whose parents reject its naturalistic features. In such a scenario, we might have to accept his ‘modest proposal’. However, if Plantinga is wrong, creationism might be still rightfully excluded under the constraints set by the Rawlsian hypothetical contract. To find out, I will proceed as follows. Section 1 explains the rationale, scope and implications of Plantinga’s claim. Section 2 calls into question two fundamental assumptions of Plantinga’s understanding of the Rawlsian device, therefore offering a very different outcome. Section 3 recreates three possible objections to the previous conclusion. These are (i) the priority of parental rights, (ii) the good of cultural coherence, and (iii) the value of diversity and pluralism. I intend to show that none of these objections succeed against the backdrop of an ideal liberal education, which takes the development of a capacity for autonomy and the instilment of civic values as paramount aims. Section 4 establishes a link between scientific knowledge and scientific reasoning - as they should be ideally incorporated in the curriculum - with the broader aims of a liberal education in a democratic context, thus providing solid grounds to pre-empt creationism’s exemption claims. Overall, this chapter concludes that OPS indicates that a liberal polity ought to ensure that all children enjoy a basic set of educational goods, which should include an adequate standard of scientific literacy. This solution might conflict with some families’ comprehensive doctrines, but it does not result in injustice being done to them.

³ According to the legal scholar and Christian apologist Francis J. Beckwith, Plantinga’s argument should not be understood as narrowly referring to hardline creationism but broadly to “any viewpoint that denies that naturalism as a worldview is correct, and that affirms that there are apparently natural aspects of the universe, or the universe as a whole, that can be reasonably accounted for an agent with the appropriate resources... any view, including Aristotle’s cosmology, that asserts that one can know that there exists non-material agents or entities responsible for apparently natural phenomena in the universe or the universe as a whole is creationist” (2005: 431). This is consistent with the way in which we have understood creationism throughout this work.

1. Plantinga's Rawlsian challenge.

As we have reviewed, contemporary debates over the natural sciences module boil down to whether creationist-friendly accounts should be included or otherwise excluded from the curriculum. Alvin Plantinga does the opposite: he asks whether Darwinian evolution should be taught as the settled truth, given the fact of religious pluralism. To Plantinga's mind, Darwinian evolutionary theory comprises a set of claims including the basic fact of organic change through aeons of time, the notion of descent with modification, the idea of universal common ancestry, and finally the claim that these processes are fundamentally caused by means of non-teleological natural selection. As such, Darwinism is not positively naturalistic - it is not asserting that life arose and developed *without* any special creativity of God - but it suggests an Ockhamistic reading: if God is not needed, perhaps we can do well without Him.⁴

Accepting Plantinga's premise about the naturalistic character of Darwinian evolution is crucial to the argument. For the reasons expounded in Chapter II, it is intellectually plausible to relate the evolutionary scientific account to substantive philosophical implications. At the very least, a Darwinian approach can provide a distinctive picture of the world as well as a way of understanding the role of the human species in it, both a picture and an understanding that basically dispense with the idea of a sustaining and intervening deity. Even if this premise is resisted and the arguments given in Chapter II are found unpersuasive, we can still pledge the reader to bracket scepticism for the sake of assessing Plantinga's proposal. In this sense, then, Darwinism will be regarded as a (partial) comprehensive doctrine in the Rawlsian sense.

This is how Plantinga's reasoning unfolds:

- i) Darwinism is a scientific theory that grows into a comprehensive belief;
- ii) Citizens in a liberal polity have the right not to be forced into alien comprehensive beliefs;
- iii) Citizens have the right to reject the teaching of Darwinism as scientific truth.

⁴ As we have insisted, this is not necessarily problematic for those theological understandings built upon the Thomist tradition which hold that God causes only through secondary means. For these, matter is divinely endowed with its intrinsic possibilities from the very beginning. But it is indeed controversial for those theological traditions in which God should be able to play an active and providential role throughout His creation - the kind of theological tradition that Nagel would call *interventionist*. As a Calvinist, Plantinga is closer to this second view. Although he acknowledges that orthodox evolutionary theory does not deny the possibility of the supernatural, he believes that its allegedly explanatory self-sufficiency comes perilously close to the same conclusion.

To Plantinga, iii) is the kind of principle that we would obtain from OPS. Recall that in OPS we lack crucial information about contingent and morally arbitrary features that define our position in the social structure. We are thus operating under what Rawls denominated a ‘veil of ignorance’ regarding such features.⁵ The choices that we make - or the principles we discover⁶ - under this veil will be fair to the extent that we are deprived of biasing knowledge. The question that Plantinga poses is what kind of education a rational person should choose for his/her children if he/she does not know what comprehensive beliefs he/she will happen to have once the veil is lifted. In this situation, he argues, a rational person would sign up to an agreement that secures that every child will receive an education consistent with his or her parents’ beliefs. Plantinga calls this the ‘Basic Right’, which states that “each of the citizens’ party to the contract has the right not to have comprehensive beliefs taught to her children that contradicts her own comprehensive beliefs” (2001c: 781). As described, I shall refer to this as the Parental Basic Right (PBR).

As it stands, Plantinga’s claim is a matter of justice under liberal rules: it would be unfair for compulsory schooling to inculcate beliefs that are ultimately inconsistent with some citizens’ prior allegiances. He wants to secure that these citizens will have “a right not to have their children taught, in public schools, the denial of their cherished religious beliefs” (Plantinga, 2001c: 782). The fact that Darwinian evolution remains hitherto the best theory or that the scientific case for creationism is appallingly weak is not relevant enough to affect PBR. In Plantinga’s recreation of the Rawlsian device, rational individuals would always prefer to reject a view - no matter how well-established it is - if it is threatening to theirs.

This works both ways. Imagine a world in which creationism is mainstream and evolution is deemed pseudoscientific - as it was indeed before Darwin. In such scenario, PBR would be a life-jacket for the person that found him/her an evolutionist once the veil of ignorance is lifted. Of course, Plantinga does not think that actual creationists are rejecting Darwin’s views

⁵ In Rawls’ own formulation, the hypothetical situation that characterized the OPS is that “no one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like. I shall even assume that the parties do not know their conceptions of the good or their special psychological propensities. The principles of justice are chosen behind a veil of ignorance... To represent the desired restrictions one imagines a situation in which everyone is deprived of this sort of information. One excludes the knowledge of those contingencies which sets members at odds and allows them to be guided by their prejudices. In this manner, the veil of ignorance is arrived in a natural way” (1999: 11, 17).

⁶ In Michael Sandel’s interpretation of what the agents are doing in the Rawlsian mental experiment, “what matters is not what they choose but what they see, not what they decide but what they discover” (1998: 132). A similar heuristic understanding can be found in Klosko (1992) and Freeman (2007).

just because they are threatening. He thinks that most creationist parents *really* believe that some version of creationism is true.⁷

From PBR, Plantinga's proposal emerges: neither Darwinism nor creationism should be presented as the factual story about how we came to be. Science educators should then explain to the students that both *could* be true depending on their own metaphysical starting points. While atheists will find the Darwinian account compelling, theists will most likely believe that creationism - in some of its versions - is correct. Thus, both camps can have their way, thanks to PBR. Though Plantinga does not mention other cases, PBR should be applicable to other hypothetical controversies of the same texture. For instance, PBR might assure flat-earthers that the rotundity of the earth will never be presented as the final world either. It might be replied that in this situation a parental resistance does not seem worthwhile: no fundamental creed has been damaged by the Spherical-Earth theory. Instead, cosmic myths and grand-tales about humanity's origins appear to touch on much more transcendent beliefs. However, the logic remains the same. Plantinga's argument does not discriminate among scientific theories. How well-established these theories are, is irrelevant to PBR. In fact, Plantinga suggests that the thesis that all life is related through common ancestry – a topic much less scientifically disputed than, say, the gene-centred account of natural selection - is still problematic in the eyes of PBR, to the extent that a substantial segment of the population deems it to be incompatible with their religious beliefs.⁸ If that is the case, then the very basic Common Ancestry thesis must also be taught *conditionally* to the students' backgrounds. To be consistent, Plantinga argues that ID creationism should be taught *conditionally* too: insofar as an important part of the citizenry believe it to be nonsense pseudo-science – in a way that conflicts with their own naturalistic beliefs - it would be equally unjust to teach ID creationism as the settled truth. To sum up, PBR does not care about the evidential plausibility of competing factual claims but about how relevant - in the sense of their susceptibility to be engaged with a more comprehensive world-picture - these claims are for the parties to the contract.⁹

⁷ As Stephen Carter has observed, for “the creationist parent whose child is being taught the theory of evolution, there is no religious question, only a question of fact. Indeed, for the parent the matter is quite simple: the child is being taught a pack of lies. The parent wants the school to teach the truth” (1994: 176).

⁸ Indeed, the plaintiffs in the widely referenced *Mozert v. Hawkins County Board of Education* case complained that the reading program in question was teaching that man and apes evolved from a common ancestor.

⁹ In this regard, the philosopher of science Robert Pennock has attacked Plantinga's proposal on the basis that accepting PBR would entail to “gut the curriculum, for even the most well-established facts may threaten some elements of some person's comprehensive doctrine” (2001: 794). This being is the case, parents that object the teaching of racial equality or the facts of reproductive health could invoke PBR to drop-out from otherwise

At this point, Plantinga acknowledges a possible objection: reasonable people might think that the truth about the empirical world should override PBR. However, he argues that we should not rush into this argument. After all, what we consider an incontestable truth today, tomorrow might not be. Plantinga goes on to enumerate scientific theories that have been widely accepted at one time, only to be discarded or superseded by new discoveries and insights. There was a moment in scientific history in which we believed that electromagnetic forces were transmitted through a space-filling substance named aether. There was another time in which alchemy was scientifically respectable. Not surprisingly, creationists point to Kuhn's ideas to indicate that what we take to be "normal science" in our day depends upon a specific paradigm, but paradigms do (though rarely) shift.¹⁰ This *could* be the fate of Darwin's theory. Therefore, it cannot be said that it stands for the true story, period. To my mind, this reply is not entirely rigorous: despite the - almost religious - commitment that some philosophers and scientists show to certain theories, science is fully aware that it can deliver only provisional truths, that is to say, assertions that gather a good deal of evidential plausibility and, only so far, represent our best shot to explain a given factual phenomenon. But science is open to continuous revision and eventually might turn out to be incomplete or incorrect. What Plantinga has in mind by referring to the "settled truth" it is always a provisional truth.

Nonetheless, Plantinga has another - deeper - way to defend PBR against possible objections. He calls into question the very premise that the right way to resolve factual disagreements is by way of empirical science as it is commonly conceived. Like many other philosophers and theologians of a realist cast of mind, Plantinga believes that religions do make factual claims, at least to the extent that these are relevant for their overall doctrinarian narrative. He thinks that the claim that factual reality should be exclusively dealt with employing the scientific method is not a scientific assertion itself, but a controversial epistemic judgement. As such, it belongs to a broader comprehensive conception, which - as political liberals of the Rawlsian kind should agree - cannot be the basis for the legitimate

mandatory subjects. Beckwith has instead argued that Plantinga is not advocating a "thoroughgoing democratic relativism" where any parental opposition should be heeded, but only regarding those issues that affect their "metaphysical patrimony" (2005: 445).

¹⁰ In Thomas Kuhn's terms, a paradigm is a "particular coherent tradition of scientific research" (2012: 11). Paradigms, according to Kuhn, "gain their status because they are more successful than their competitors in solving a few problems that the group of practitioners has come to recognize as acute (2012: 24). A paradigm is, at the beginning, largely a promise of success. Normal science, in turn, would consist in the "actualization of that promise, an actualization achieved by extending the knowledge of those facts that the paradigm displays as particularly revealing, by increasing the extent of the match between those facts and the paradigm's predictions, and by further articulation of the paradigm itself" (Kuhn, 2012: 24).

exercise of political power in pluralistic contexts. Hence, we are caught in a dilemma: our institutions cannot prefer a scientific epistemic base (SEB), because by doing so they would be perpetrating an injustice to those parties that have a different epistemic baseline from which to develop knowledge claims.

This is the nub of Plantinga's argument: he does not deny that naturalistic-by-default evolution might be the best explanation *from* a SEB. He just thinks that there is no way to justify SEB under the rules of liberal fairness. Put differently, parties to the Rawlsian contract would never sign up for an agreement that imposes one epistemic base via compulsory education, at least not in a society where different epistemic sensibilities coexist. As Plantinga aims to articulate an internal critique to liberalism, he demands the neutrality that liberalism promises. Hence, he pleads for an epistemic base that could overlap with the diverse epistemic sensibilities of the citizens. Then, what should be taught unconditionally - as the sober truth - is only what can be taught "in accord with all the relevant epistemic bases" (Plantinga, 2001c: 790). Science, as such, might not do the work, especially if our idea of science involves a principled commitment to methodological naturalism.¹¹ In sum, we should not use public resources to inculcate any belief or teach any claim as the settled truth in pluralistic societies insofar as these beliefs and claims:

- (i) Contradict the comprehensive doctrines of the parents; and
- (ii) Emerge from an epistemic baseline that is not shared by all.

Plantinga's assumption, then, is that theistic believers understand the world from a different epistemic baseline. Accordingly, he does not advocate telling students that they should be sceptical about Darwinian evolution, but rather argues that we should tell them that Darwinian evolution is more likely to be true *only* from SEB and creationism is more likely to be true from a theistic epistemic baseline - an epistemic baseline to which Christians like Plantinga are already committed. This is what he means by teaching both accounts *conditionally* to their respective prior comprehensive beliefs.

Therefore, against the two-tier resolution-framework that I have proposed in the previous chapter, Plantinga argues that no neutral adjudication is possible if that means appealing to science. In his own Rawlsian reading, appealing to SEB is not good enough to settle the plausibility of a given factual claim in a fair manner for all parties to the contract. Of course,

¹¹ It should be clear by now why it was so important to reject the principled version of MN in previous chapters. If science is committed to intrinsic MN, Plantinga's argument gains traction. But as we have rejected MN, Plantinga's claim appears thus narrowed.

once we recognize that Darwinism is the best hypothesis *given* SEB, the problem for liberalism comes to an end: children of theistic backgrounds will not be forced into such beliefs. Instead, they will learn that different epistemic bases to evaluate factual claims are intellectually available, and, fundamentally, that these are equally respectable from a political perspective. In such a scenario, “there would be no objection from the point of view of fairness” (Plantinga, 2001c: 789-790). Fairness would then require a mandatory curriculum that refrains from affirming what the right epistemic baseline is, at least when it comes to adjudicating between competing factual claims, and these claims are revealing religious or philosophical disagreement.

2. The Original Position Strategy.

Thus presented, there are basically two normative pathways to assess Plantinga’s allegedly liberal challenge. One route is to work out a proper political justification for preferring SEB when it comes to curriculum debates or similar discussions around democratically contested factual assertions. If what Plantinga believes to be a controversial epistemic base can be plausibly defended as a public knowledge-generator system that can overlap with different philosophical and religious doctrines, then we have overcome his challenge. This will be the task of the next chapter. The other route is to delve into the aims of mandatory schooling in liberal democracies. Here, the crucial interrogation is whether children should be told about the truth (or lack of it) of factual claims when these potentially conflict with their parent’s comprehensive beliefs. In other words, whether we should accept PBR as a display of liberal justice or otherwise we think a Rawlsian-minded philosopher should conclude differently. To this I turn now.

Paraphrasing Daniel Dennett’s presentation of evolutionary theory as *Darwin’s Dangerous Idea*, Francis J. Beckwith refers to the implications of a Rawlsian framework to solve the evolution versus creation controversy as “Rawls’s Dangerous Idea”. To Beckwith, Plantinga’s proposal is the only one consistent with the contractarian justificatory strategy that Rawls put forward in *A Theory of Justice*. In turn, Beckwith maintains, “those who seek to institutionalize naturalistic evolution violate political liberalism when they employ the coercive power of the state to indoctrinate citizens who reject naturalism” (2005: 437). Recall that we have already bitten the bullet to this respect: we cannot reject Plantinga’s claim by arguing that Darwinian

evolution does not *nudge* into naturalism. Thus, if we are to dispute PBR, we must take other pathways. In this section I will travel two: on the one hand, I shall restate the character of the representative agent behind the veil of ignorance; on the other hand, I shall inquire into the kind of primary goods that the hypothetical person would rationally choose under the veil of ignorance. These will shape my own version of OPS.

2.1 The character of the agent in OPS

Let us begin with the nature of the representative agent who is choosing - or discovering - principles in the Rawlsian original position device. Plantinga assumes that the person that signs up to PBR is vested with a specific familial role: he/she is a parent. This seems to be coherent with the requirement that the rational individual under the veil of ignorance should possess the moral and cognitive development that we usually ascribe to adults and not to children¹². But the notion of adulthood has different meanings. Biologically speaking, an adult is a human being (or any other organism) that has reached sexual maturity. Legally speaking, an adult is a person who has attained the age of majority. Under the former categorization, the teenager in high school is an adult - he or she is biologically prepared to be a parent. In the latter categorization, school students are almost never adults. However, for the sake of the argument, let us assume that teenage pregnancy in contemporary liberal democracies is rare and most parents have already reached the legal age of adulthood. This is also consistent with Rawls's suggestion that the representative agents situated in the original position can be depicted as "heads of families" (1999a: 111). Thus, Plantinga would be correct in thinking of parents as suitable decision-making agents in the hypothetical contract.

This is not the end of the story. Rawls requires that these heads of families show "a desire to further the well-being of at least their more immediate descendants" (1999a: 111). This requirement rules out any social system in which children should live entirely according to their parents' dictates. As rational individuals in the original position, these adults are depicted as mutually disinterested, but, Rawls warns, they are not indifferent to their children's interests. In this hypothetical contract, parents should act effectively as trustees. Trustees think first and foremost about promoting the interests of their beneficiaries. Otherwise they are negligent in their fiduciary task. There lies the problem with the fashion

¹² As Samuel Freeman explains about the Rawlsian hypothetical contract, here only adults "are assumed to have and to effectively pursue a rational plan of life with a schedule of coherent purposes and commitments that give their life meaning" (2016).

in which PBR is articulated. Not having their comprehensive beliefs challenged by their children's education might be a reasonable expectation from the parent's standpoint. But the question is whether such expectation is sincerely grounded in a desire to further the well-being of the child. In other words, from the OPS perspective, parents are prevented to mind only their interest. Rather, they should be representing "a continuous line of claims" (Rawls, 1999a: 111) in which all relevant generations are considered. Thus, my preliminary intuition is that the child's right to an adequate education - that is not conditional to any parental belief - should be part of that chain of claims. In other words, if children have any substantial interest in possessing a set of educational tools to advance their present and future wellbeing - which could eventually include ideas and skills in tension with their parents' comprehensive views - then it seems that PBR cannot be argued as it stands, to the extent that children's interests must be seriously considered by the representative agent.

There is a still more radical interpretation of the same point. Furthering the idea that these rational agents should be representing a continuous line of claims, Rawls points out that we can require parties "to agree to principles subject to the constraint that they wish all preceding generations to have followed the very same principle" (1999a: 111). This means that rational individuals in OPS must not think of themselves only as familial heads, but as members of a familial sequence in which they will occupy different positions across their lifespan. In simple terms, they must think as parents and children indistinctly. I find this a plausible interpretation against a Rawlsian backdrop: actual parentage is as morally arbitrary as a person's gender, race or social status. If that is so, it should be included amongst the contingent features covered by the veil of ignorance. Thus, the hypothetical person should be capable of picturing himself/herself as a child, being raised by different families with distinctive comprehensive beliefs. What type of education would that person choose without knowing whether, once the veil of ignorance is lifted, he/she will be living in a strict fundamentalist household or under the aegis of a freethinking community? Would he/she choose an education that is aligned with his/her parents' beliefs no matter what? Or would he/she choose an education that aims at his/her own - present and future - well-being? Regardless of the answer to these questions, it seems safe to affirm that the answer to the question 'what type of education do I want to receive if I picture myself as a child?' might be different to the answer to the question 'what type of education do I want my child to

receive?’ This distinction, therefore, makes a persuasive point: the representative agent in OPS should be able to choose principles that will affect his or her own formative stages too.¹³

Either way - imagining heads of families who are entirely conscious and responsible for their fiduciary role or devising a scenario in which the hypothetical person must also think as a child subjected to the school curriculum - it seems that Rawlsian theorists should reject Plantinga’s reading and instead accept our OPS.

2.2 Educational goods as primary goods.

Let us turn to the second argument with a question: what are citizens’ party to the contract choosing under the Rawlsian scheme? In Plantinga’s view, they are signing up for a right not to have comprehensive beliefs taught to their children insofar as these teachings contradict their own beliefs. This seems like a *prima facie* reasonable decision to take under the veil of ignorance. It would surely save us a lot of stress and disharmony. However, this contractarian exercise aims at allocating what Rawls called primary goods. These are supposed to be goods that everybody desires, regardless of any specific life project. With more of these goods, Rawls asserts, we can generally be assured of “greater success in carrying out [our] intentions and in advancing [our] ends, whatever these ends may be” (1999a: 79). Among these primary goods are rights, liberties, opportunities, income and wealth, and even the social basis for self-respect. These are goods that citizens need to live as free and equal members of their societies. Indeed, the very two principles of Justice as Fairness are defined by arranging the distribution of these goods.

What goods would our representative agents choose if they were to put themselves in their children’s shoes? I shall argue that citizens party to the social contract would sign up for an agreement that secures a fair set of educational resources, to the extent that these are fundamental to prepare individuals to be free and equal citizens. PBR might be tempting, but it does not capture education as a primary good in this sense. To put it differently, the

¹³This is part of the response that Pennock gives to Plantinga’s allegedly Rawlsian attempt: “Under the veil of ignorance one should not limit one’s deliberations to the scenario in which one was a parent with a comprehensive belief that he or she did not want challenge. The rational person would also have to think about being a child growing up in the household of such a parent” (2001: 795). The legal scholar James Dwyer has put it in more blunt terms: “Imagine that tomorrow you were going to be a child again and that your parents would send you to a religious [fundamentalist] school. Ask yourself what you would rationally prefer -to receive an education that fosters higher-order thinking skills... and provides the knowledge that most other children in society are acquiring (even if you would experience some anxiety because of your parents’ opposition to this education), or instead to receive schooling that thwarts cognitive development...[and] provides distorted and false information” (1998: 146).

parental expectation of not having comprehensive beliefs taught to your children insofar as these beliefs contradict yours, seems only secondary to the primary expectation of having a set of educational goods as described.¹⁴

The specifics that should be included in this basic set of educational goods will be contested. But as they are intended to work towards a society in which individuals are free to pursue their own life projects in conditions of political equality, much of the literature associate these educational primary goods with the fundamental aims of a liberal education. Among them, two are paramount: developing a capacity for autonomy and the instilment of democratic virtues. These are not contradictory: an education for autonomy is an education for individual self-determination, while civic purposes are related to the capacity for collective self-determination.¹⁵ Whatever the right correlation between the two aims is, the OPS suggests that we should arrange an educational system in which all children enjoy a fair amount of these goods, regardless of their parents' comprehensive doctrines. This is what Brighouse and Swift (2014) have dubbed the "egalitarian challenge": we ought to ensure that political institutions provide equal educational opportunities to children born into different families, for them to develop fairly similar qualifications and competences. Conversely, adopting PBR implies that we accept as normatively unproblematic that children born into different households have access to very different educational resources. For our case, some of them would be deprived of mainstream scientific education if scientific education clashes with their parents' religious beliefs. To put it bluntly, PBR would do a disservice to those children that were unlucky enough -in this specific sense- to have creationist parents.

¹⁴This is the tone of Dwyer's *Ramlsian* proposal: "Not knowing whether any possible religious claims are true, parties behind the veil of ignorance rationally would ensure for themselves the opportunity for success in this world that they know are likely to want, rather than gamble these opportunities away for the radically indeterminate possibility that the particular persons who will be their parents hold true religious beliefs and would choose for them an education that steers them towards other-worldly-benefits" (1998: 168).

¹⁵In most accounts, both aims are mutually reinforcing. Some authors highlight autonomy and others civic purposes, but they always find room for the other as if it were contained by the preferred goal. "In a slogan", Richard Arneson and Ian Shapiro put it, "democracy and autonomy go together" (1996: 404). In the same vein, Amy Gutmann has stated that "most (if not all) of the same skills and virtues that are necessary and sufficient for educating children for citizenship in a liberal democracy are those that are also necessary and sufficient for educating children to deliberate about their way of life, more generally (and less politically) speaking. It is therefore understandable that there is in liberal political practice little difference between educating for citizenship and educating for individuality or autonomy" (1995: 573). Brian Barry (2001) thinks that both aims represent different liberal impetus: the societal and the paternalistic. While the former would be education for citizenship -and therefore society has a legitimate interest in pursuing it- the latter would be education for the child's own future welfare.

In this sense, it has been argued that students who are deprived from a certain degree of scientific literacy - e.g. students that are encouraged to doubt evolutionary theory - will face academic, professional and labour disadvantages. This might represent a serious handicap in societies increasingly entangled with biotechnologies.¹⁶ On a larger scale, this could affect the position that citizens hold in the occupational structure. If this is really the case, then the parental disservice is a serious one. This is indeed a much-discussed topic in public forums on creation vs. evolution. However, it is an empirical claim for which the data is elusive and contradictory.¹⁷ This research lacks the quantitative resources to settle the point. Nonetheless, once we understand the radicalness of Darwinian evolution and the overwhelming evidence in its favour, it seems plausible to argue that keeping students ignorant, deliberately suspicious or in plain misunderstanding about the most fundamental idea in all life sciences - nothing less than the basis of modern biology - constitutes a subtle, specific but no less troubling form of intellectual harm.

This is not the same as accusing every form of religious schooling as child abuse, as some are prone to do in the militant atheistic camp. The charge that is being laid here is much more limited. More plausibly, it might be said that children who grow up with an accurate picture of the natural world and its causal mechanisms will have a cognitive edge over those who do not. This could sound like an overstatement. After all, Plantinga's argument boils down to the "modest proposal" that evolution and creationism should be both taught *conditionally*. However, PBR is structured in such a way that it allows a radical epistemic

¹⁶ As Amy Gutmann interprets, primary goods are not timeless or universal. The basic educational goods needed at one time and society could be different from the basic educational goods needed in another time and society. In this account, primary goods "reflect a common understanding within a society of what goods rational individuals, ignorant of their particular interests, would want provided for them within that society" (Gutmann, 1980: 341).

¹⁷ The science educator and broadcaster Bill Nye frequently contends that in those places where creationist views are widespread -like in the so-called US 'Bible Belt'- there is an objective lack of scientific institutions and the amount of scientific research is scarce. This is problematic, according to Nye, for the future role of the United States as a technological and scientific frontrunner. Elsewhere, James Dwyer quotes some empirical evidence to support the claim that school students who are taught to mistrust the scientific methods and to reject commonly accepted bodies of knowledge "have great difficulty coping in mainstream institutions of higher learning" (1998: 31). In Dwyer's view, "schools that deny their students access to a substantial body of information, such as standard views on scientific, sociological and historical matters, or that distort those views seriously handicap their students. They are likely to perform less well than other students on college entrance exams, in college courses, in doing independent research, in interviewing for jobs and establishing connections with professionals, and ultimately in carrying out any jobs they do obtain that require knowledge of such information" (1998: 170). In turn, the Young-Earth creationist and Christian activist Ken Ham uses to present a list of scientists and engineers with respectable academic credentials who are evolutionary sceptics, if not full-blown Biblical creationists. Ham holds the view that *molecules-to-man* evolution -as he calls it- has nothing to do with a proficient commandment of technologies or with the observational capacities needed in experimental sciences.

relativism. By virtue of PBR, parents can systematically oppose the methods and conclusions of secular science.¹⁸ In the face of this possibility, the Rawlsian theorist should retort that the intellectual skills needed to acquire an accurate picture of the natural world and its causal mechanisms are indeed components of a set of developmental opportunities that should be distributed in a fairly egalitarian way. Thus, the Rawlsian theorist will reject PBR if PBR is threatening the children's developmental opportunities. Echoing Brian Barry, we believe that being able “understand the world around us and being able to appreciate the finest creations of the human mind and spirit are, quite straightforward, benefits. And they are benefits that parents should not be permitted to withhold from their children” (2001: 221). Liberal-egalitarians, then, should stand against the phenomenon of disadvantage-conferring parents in the same way as they criticise the role of advantage-conferring parents.

To conclude, while Plantinga's PBR states that each of the citizens party to the contract has the right not to have comprehensive beliefs taught to his/her children that contradicts his/her own comprehensive beliefs, a proper Rawlsian clause agreed under the veil of ignorance would roughly state that ‘each of the citizens party to the contract has the right to a set of basic educational goods in her formative years, regardless of their parents' comprehensive beliefs’. This is the basic right that emerges from OPS. The set of basic educational goods distributed from OPS would include an appropriate degree of scientific literacy. Arguably, within this appropriate degree, the fundamental notions of Darwinian evolution as the basis of modern biology should be covered.¹⁹ Thus, individuals in the hypothetical contract would reject PBR if that means being astray from the scientific consensus when it comes to defining the curricular content to be applied to them as children. Even though Darwinism appears to have disturbing religious implications to some people once the veil of ignorance is lifted, the rational person in OPS will always choose to *know* the scientific facts of his/her time. Importantly, he/she will not choose these provisional truths in their potential to constitute starting points for a comprehensive doctrine, but in their

¹⁸ Recently, Oduntan Jawoniyi (2015) has taken this view. In concrete, he argues for a religious module in which all competing truth-claims (metaphysical and scientific claims all the same) are presented to the students within a framework of *epistemic egalitarianism* and *epistemic neutrality*. Children would then freely decide which truth-claims are more persuasive. However, he does not indicate whether this course is aimed as a substitution, a complement or a supplement of the natural sciences module.

¹⁹ It might be asked why biology is so important in comparison to other sciences. I do not want to downplay the relevance of other disciplines. There was indeed a time in which physics, chemistry, mechanics or astronomy -what people called ‘exact’ sciences- were considered exemplary sciences. But, as reported by Ernst Mayr (1997), this scenario slightly changed with the advances of evolutionary biology, genetics, cellular biology and neuroscience -among others- during the second half of the 20th century. From medicine to biotechnologies, biology seems to be the pivotal science for the betterment of life.

empirical, speculative and predictive capacity to account for factual phenomena and provide an accurate description of the world. How he/she resolves the eventual contradictions between the two - if they ever arise - is a different problem. Its place for resolution is not via OPS.

A final but crucial point should be added. The aim of scientific education is not necessarily to inculcate *belief*, as Plantinga assumes in PBR. Although we have already agreed that Darwinian evolution has the in-built capacity to grow into a substantive world-picture, the term *belief* is misleading in explaining what is to be taught in the context of the science curriculum. As philosophers of education Mike Smith and Harvey Siegel explain, “the primary goal of science education should be student knowledge and understanding, which typically (but not always) involve belief and typically (but not always) guides action” (2004: 554). In this framework, science aims at creating universal knowledge about material phenomena through an evidence-based method. As such, science is the place for knowledge, not belief. Whilst the former is about the understanding of an objective reality, the latter refers to the subjective acceptance of such a reality. In this sense, most students will understand *and* believe that evolution is true. But many students with creationist backgrounds will resist this link. For them, belief will not follow from knowledge and understanding.²⁰ In these cases, Smith and Harvey argue, “knowledge and understanding alone must, and should, suffice... [they are] a sufficient goal for both student and teacher” (2004: 565). This is a reasonable formulation and I shall endorse it. Liberal education - even in a module that aims to transmit objective knowledge - should not *coerce* onto any belief. It should be contented with knowledge and understanding, and let belief fall where it may. So Plantinga and the creationists cannot argue that children in OPS are being forced onto Darwinian *belief* as such, let alone into a Darwinian way of life.

²⁰ In Smith & Siegel’s account, “biology teachers regularly encounter students who understand evolutionary theory but do not believe that it is true... Science education often asks students to understand historically significant theories and explanations although they have been supplanted by more recent theories. A person can clearly understand the principles of Ptolemaic astronomy or Lamarckian inheritance but not believe them to be true” (2004: 566).

3. Liberal Education in Tension.

Three main lines of argument can be articulated to resist the conclusions of this section. First, it might be said that liberals should be always deferential to parental rights. Second, it might be also argued that liberals must be attentive to familial claims to live in culturally coherent social environments. Third, diversity-based liberals might argue that contemporary societies should celebrate instead of discouraging the fact of pluralism, which surely includes different creation myths. I take these objections in turn.

3.1 Parental Rights.

Plantinga's concern is all about parents, specifically about parents' plenary rights: it is about *their* freedom to communicate *their* way of life to *their* offspring through different means of upbringing, which includes a substantial degree of choice over the type of formal education they will receive. In this picture, children are somehow secondary to the fulfilment of their parents' aspirations and entitlements. But, is Plantinga's concern a liberal one?

The claim that authorities, to be legitimate, should refrain from educating our children is common in the libertarian repertoire. It targets the limits of the state when it comes to the intimate and domestic parent-child relationship. That is why many, if not most, libertarians endorse home-schooling or home-education arrangements. This is also a classic conservative intuition: that which belongs to the family stays in the family. A slightly different version of the same argument states that by shaping their children's values and beliefs, parents are exercising their own religious freedom, liberty of conscience and even freedom of speech. Here, individual freedom, self-determination and parental control are conflated as one fundamental negative right.²¹

A different way to justify strong parental rights is by outlining that the experience of parenting is crucial for the realization of one person's life goals. In its boldest form, this claim

²¹ This position was canonically summarized by the Law scholar Charles Fried, who argued that "the right to form one's child's values, one's child's life plan and the right to lavish attention on the child are extension of the basic right not to be interfered with in doing these things for oneself" (1978: 152). In the same vein, the philosopher of education Eamonn Callan has argued that, "the freedom to rear our children according to the dictates of conscience is for most of us as important as any other expression of conscience, and the freedom to organize and sustain the life of the family in keeping with our own values is as significant as our liberty to associate with others outside the family for any purpose whatsoever" (1997: 143).

appeals to the kind of ownership that the procreator has over the creature, as if the child belonged to the parents.²² A less radical interpretation states that parents can and must shape their children's values to honour their own commitments to certain comprehensive projects. This is Colin MacLeod's "creative self-extension thesis" (2010): the art of raising a child gives parents a unique opportunity to pursue their own life projects. Rather than being about the wellbeing of children, the self-extension thesis seems to be about how much the parents would lose if too much interference in rearing were allowed.

These outlooks are all consistent with Plantinga's assumptions: it is the citizen-parent who is the (only) morally relevant agent to be at the centre of the contractarian device. Choices thus correspond to one specific familial role and not to others. In other words, Plantinga's PBR appears to rely on a form of *parentarchy*, meaning the system in which children should live according to their parents' dictates. Accordingly, if parents do not want to expose their children to alien comprehensive beliefs, then their children will not encounter these alternative doctrines at least until adulthood. The question is whether this heavily parental-centred postulate is consistent with the paramount aims of liberal education through schooling.

For most liberal theorists writing on education, it is not. Amy Gutmann, for instance, rejects what she calls a "State of Families", namely the institutional arrangement in which parents retain the right "to insulate their children from exposure to ways of life or thinking that conflict with their own" (1999: 29). To Gutmann, the role of political power is to ensure that all children are equipped "with the intellectual skills necessary to evaluate ways of life different from that of their parents" (1999: 30). Stephen Macedo argues that the "public school system epitomizes... the freedom of all children to make their own way in the world even if doing so means rejecting the wishes of their parents and communities of birth" (2000: 41). In turn, Brian Barry reminds us that "we must take as axiomatic that the interests of the parents and those of the children are distinguishable and potentially conflicting" (2001: 202). If this is correct, governments should not abdicate all educational authority to parents precisely because the child's "right to an open future" - in Joel Feinberg's (1980) seminal words - is at stake. From a liberal perspective, then, children are not the property of their parents. Neither are they extensions of their parents' life projects, however respectable these turn out to be. Of course, they are not the property of the political body either. Nonetheless,

²² This is what Brighouse and Swift denounce as the *proprietary* picture (2014: 114). Dwyer compares this notion of absolute parental rights based on ownership with the kind of rights enjoyed by slaveholders or with traditional rights of consortium (1998: 73).

as the political association has some reasonable notions regarding what the child's fundamental interests are - including future interests - it can legitimately claim a limited right to interference. The very idea of compulsory education is a case in point. Here, the state's intrusion is not merely permitted but required in the name of the child's welfare. For the same reasons, most liberal theorists and philosophers of education of a Kantian mind would argue that the children's formative needs are ends in themselves. Hence, it would be wrong to treat them as non-consenting instruments for the furtherance of the ends of either parents or the larger society. From a liberal perspective, then, they should never be used merely as means for the realization of other people's goals.

All in all, liberal education seems to advise a child-centred approach.²³ Both parents and the state partake in responsibilities and obligations emanating from what we owe to children as a matter of justice. Contrary to Plantinga's underlying assumption in favour of *parentarchy*, education is thus a "shared trust of parents and polity" (Gutmann, 1999: 116). Surely parents are in a prime position to judge their children's best interests. But such a position should not be understood as an overriding right to make all the decisions and impose full authority over their children's education. It is, therefore, a conditional right.²⁴ As such, it allows parents to make decisions that have their children's welfare - present and future - in mind. Once this fiduciary duty is neglected, such a right is compromised.²⁵ Thus, a child-centred theory of

²³ A child-centred approach should not be understood here as a denial of the parent's interests in the filial relationship. Matthew Clayton, for instance, has argued that radical child-centred approaches "attach no direct relevance to the interest parents have in raising their child" (Clayton, 2006: 53). Thus, he proposes a "dual interest view... in which the interest of both children and parents count in the allocation of childrearing rights" (Clayton, 2006: 48). The "dual interest view" is defended by appealing "to the interest we have in pursuing our conceptions of the good life, which in many cases support, and sometimes require, the founding of a family" (Clayton, 2006: 54). This is fair enough, especially since Clayton's rights to childrearing are rather restricted. They mainly concern rights of custody but they do not extend to decisions over the content of the child's school curriculum, for example.

²⁴ Some political theorists do not even express it as a right but rather as a "privilege" (Dwyer, 1998: 46; Levinson, 1999: 57). The difference between right and privilege would reside in that "a parental privilege would not convey or reflect a sense of entitlement to direct a child's life. Instead it would reflect a view of parenthood as a benefit enjoyed contingent upon fulfilment of attendant responsibilities, like other fiduciary positions such as a trustee attorney" (Dwyer, 1998: 64). Clayton has rejected this interpretation, retorting that parents have legitimate rights to childrearing. In his view, "even if we believe that parents hold no claim rights protecting all their decisions from teachers, doctors, and the like, we may retain our belief that they hold claim rights against certain other adults who express a desire to shape their children's education. If a stranger approaches a parent with the intention of directing the child's upbringing, the parent can legitimately decline the offer with an appeal to a claim right that protects her childrearing conduct from interference by strangers" (Clayton, 2006: 80).

²⁵ As Brighouse and Swift assert, "parents' rights and duties, then, are entirely fiduciary. Parents have just those rights and duties with respect to their children that it is in their children's interests for them to have" (2014: 121). In turn, "this understanding of parent's fiduciary obligation implies a strong role for the state as the ultimate arbiter of at least some children's interests" (Arneson & Shapiro, 1996: 387).

liberal education is hard to square with PBR. For the same reason that liberals are wary of governmental tyranny, they should also be wary of the specific kind of parental tyranny that threatens the rights and damages the prospects of their children.²⁶

3.2 The Value of Cultural Coherence.

Once it is agreed that liberals of an egalitarian strand should move from a parent-centred to a child-centred view when it comes to deciding on political responsibilities in education, Plantinga's challenge is weakened but not yet wrecked. Parents can still rebut that their concern is far from tyrannical, *proprietary* or even self-extensive in any selfish sense. They could reply that all these seem to be caricatures of their real interest, which is truly oriented to their children's wellbeing. Take, for instance, the claim that was raised in *Mozert v. Hawkins* case; here, parents were said to be genuinely worried about their children's afterlife chances if they were introduced to too secular, too liberal or too irreligious teachings. It is, at least, an intelligible worry: from a sincerely held fundamentalist perspective, the prospect of avoiding hellish damnation trumps any right to a terrestrially open future.²⁷ But fear of Satan's flames does not seem the kind of public reason that the polity should recognize as legitimate to grant parents the authorization to shield their children from potentially contradictory beliefs. As a sizeable number of liberal theorists note, intelligibility is not accessibility, being accessibility the basic requirement to award a given reason its public character. Other liberal philosophers argue that the problem in cases such as *Mozert* is that there the trustees are simply mistaken about the content of their duty of care and that they are "misidentifying their child's true interests" (Brighouse and Swift, 2014: 153). Although it is hard to be sure about those true interests, some theorists are confident to argue that "temporal interests are the only interests with which the state can properly concern itself in carrying out its responsibility to protect the well-being of children" (Dwyer, 1998: 82).

²⁶This view has been summarized by Stephen Macedo: "we must remember... that not only the state but also parents can obstruct the freedom and equality of children... we should also remember that the parental freedom to control the education of children can itself be a form tyranny -especially if such control extends to a view of the child as the parent's property" (2000: 101).

²⁷Regarding these religiously fundamentalist parents, Dwyer thinks that they "do not claim to know better than state education officials what knowledge or cognitive skills children need to prepare for a broad range of careers in mainstream society. They claim that their children's salvation is more important than, and perhaps even incompatible with, success in mainstream society" (1998: 60). In turn, Plantinga has acknowledged that creationist parents may be thinking "that one's eternal welfare depends on their accepting the true comprehensive beliefs" (2001: 781). This was indeed the fear of Charles Darwin's wife, Emma: that the 'heretical' thesis of her husband could affect his chances of entry to heaven, therefore affecting their possibility of being reunited in the afterlife.

However, creationist parents can avoid the pitfalls of hell-talk and instead develop a more complex version of the argument. We will call this the argument of cultural coherence. It assumes that families belong to a certain community of shared values, practices and beliefs. It then suggests that it would be inconvenient for everyone - not only for the parents - if children from such families were presented with doctrines that are strongly rejected by their communities. As such, the argument ceases to be (only) about parental goals, religious freedom or rights to control, but it extends to their children's wellbeing. Therefore, PBR secures the child a healthy atmosphere of cultural consistency. Otherwise, children and youngsters might develop a sentiment of alienation from traditional family doctrines, a form of cognitive dissonance between what is held to be true at home and what is taken to be true at school.²⁸

The argument for cultural coherence, then, is different from the strong claim of parental rights: it is meant to benefit the child, at least to the extent that it avoids the evils of social rootlessness. As such, it appears more communitarian than libertarian. What is crucial here is not that children-as-students are presented with accurate representations of reality, but that children-as-members of their respective communities fit in their own cultural universes. As we shall soon see, it is an argument that goes well with the postmodernist assumption that claims to universal knowledge are not just cognitively impossible but probably driven by cultural imperialism. In the short term, cultural coherence stands for the value that children will increase their chances of prolonging an intimate relationship with their nuclear or extended families, even during adulthood. In the long term, it stands for preserving group life. With a clause such as PBR enacted, political institutions will aid the efforts towards intergenerational cultural continuity. Like the Amish Order in *Yoder vs. Wisconsin*, those who hold this argument are worried about new generations, dazzled in the marketplace of ideas, abandoning the old house of shared beliefs and traditions. Interestingly, PBR works as a safeguard for theist and atheist communities alike, insofar as nonbelievers will also succeed

²⁸ Along these lines, the political philosopher Shelley Burt has advocated for "state accommodation of parents' educational choices not on free exercise grounds but in terms of parents' and state's shared responsibility to meet *children's developmental needs*" (1996: 413) *Italics are mine*. On the one hand, Burt expresses her rejection of parentarchy as she agrees with the notion of parents "fundamentally as trustees of their children's interests, with a responsibility (shared by the community at large) to provide an environment in which children can grow into socially competent, civically responsible, independent adults" (1996: 424). On the other hand, she thinks that public schools ought to make room for parental claims to the extent that "the effort to provide a consistent moral and religious environment for a child represents an important way of building the psychological and cognitive resources which the child will need to choose and live a good life as adult... because of the robust pluralism of our culture, then, we would do better to encourage parental efforts to create a moral environment filled with consistent, not conflicting messages" (Burt, 1996: 425-426).

in shielding their children from the treasures and sorrows of a religious education. We can then say that Plantinga's proposal is not therefore about what is to be distributed fairly but about how to preserve the agent's position, whatever that might be. Should we enact PBR in the name of cultural coherence?

Most liberals acknowledge that children, who are adults-in-the-making and citizens-to-be, do not work out their comprehensive beliefs in a vacuum. The very idea of cultural coherence belongs to Bruce Ackerman's account of liberal education (1980: 141). Drawing on Ackerman's account, Gutmann suggested that "sensible liberals recognize that the capacity for rational choice requires that we place some prior limitations on children's choices. To have a rational sense of what we want to become, we need to know who we are" (1999: 35). This has been Will Kymlicka's (1989a, 1995) long standing claim: a basic sense of self-respect requires a stable personal identity, which can only be developed within an enduring cultural context. Thus, as Meira Levinson has concluded, "the most overwhelming reason to grant parents the privilege of primary paternalistic control derives from the child's particular need for cultural coherence and a well-developed and culturally embedded personality" (1999: 56). Following these insights, it seems that something valuable would be lost for all sides if we were to embrace the view that parents should not be allowed to shape - to a reasonable extent - their children's values and beliefs. As usual, it all boils down to the question of how to measure such a reasonable extent. Excessive value-shaping might be problematic. Cultural coherence is welcomed, but most liberal philosophers argue that it is not an overriding consideration when children's rights are at stake.

In this sense, to many liberal theorists, education through formal schooling is about preparing individuals to live autonomous lives. From this perspective, the value of cultural coherence should be subordinated to an autonomy-enabling education. This education will sometimes require that students be confronted with ideas that might have a disturbing effect, not for the sake of bare conflict, but because this exposure is the one that triggers critical reflection about one's own comprehensive heritage. It is because developing these capacities is so important for children - it is in their best interest even if they do not know about it -, that parents are not alone in their fiduciary role; political authority shares some responsibility with them to help children to acquire and develop a sense of autonomy.

Here, I am not referring to the sort of autonomy-based comprehensive liberalism that Rawls usually identifies with Kantianism. Rather, I am referring to the sort of liberal education that attempts to provide all students with a basic set of cognitive and social skills that would

enable them to choose the life that they want to pursue afterwards.²⁹ Thus presented, it is not incompatible with cultural coherence. Both values can coexist. However, the condition for coexistence is that appealing to cultural coherence can never curtail the autonomy-advancing opportunities that liberal education aims to secure via the mandatory curriculum. In other words, accommodation claims might be accepted to the extent that future individual autonomy is not compromised. Accordingly, Clayton has labelled this the “end-state view” of autonomy.³⁰

However, Clayton himself has articulated a more radical response to the argument of cultural coherence. In his account, adults have no right to enrol their children into their own comprehensive doctrines, whether religious or secular, in the same way that governments are not legitimated to impose a specific conception of the good on their citizens. On the contrary, they must offer them an array of alternative philosophical, moral and religious outlooks, for them to develop individual autonomous choices. So, the autonomy we should care about is not an end-state but a precondition. According to this account, “one has a permission to encourage an individual to adopt a particular conception of the good when, but only when, the individual has realized the mental capacities to deliberate rationally about that encouragement” (Clayton, 2006: 105). Clearly, this position implies an outright rejection of PBR at its core: it is not only that parents cannot shield their children from potentially disturbing ideas; it is that parents cannot draw upon their comprehensive doctrines in raising their children.³¹

²⁹ I am thus following Meira Levinson’s notion of autonomy as a “capacity to form a conception of the good, to evaluate one’s values and ends with the genuine possibility of revising them should they be found wanting, and then to realize one’s revised ends” (1999: 15). This way, as Levinson argues, “autonomy is not and cannot be itself a conception of the good; to say that one lives an autonomous life is to say almost nothing about the substance or content of that life” (1999: 72). To Arneson and Shapiro, “what marks education for autonomy is development of skills and habits of critical thinking... the autonomous person is one who is capable of standing back from her values and engaging in critical reflection about them and altering her values to align them with the results of that critical reflection” (1996: 393). In this instrumental or non-essentialist version, “autonomous choice is not itself an element of the good life, it is merely a device for discovering the good life” (Arneson and Shapiro, 1996: 402). To highlight this instrumentalist twist, Brighouse recommends “autonomy-*facilitating* education rather than autonomy-*promoting* education” (1998: 733). I will not be distinguishing between these two subtly different formulations. I will instead use autonomy-*enabling* education to describe an education that aims to develop in every student a *capacity* for autonomy.

³⁰ The end-state view “forbids parents from removing their child from classes that expose her to comprehensive doctrines that challenge their own ... It condemns parents who seek to instill in their child an unshakeable commitment to a particular religious community” (Clayton, 2006: 90).

³¹ Clayton acknowledges that this “is a significant restraint that prohibits what many parents believe to be routinely acceptable forms of appeal and values which animate their lives” (2006: 96). The precondition view “condemns many aspects of parental conduct that are widely regarded as permissible or even mandatory” (Clayton, 2006: 109).

The creationists might argue that Clayton's view is self-defeating: since we have accepted that Darwinism can amount to a partially comprehensive doctrine, political institutions and parents alike should either restrain its teaching or supplement it with a variety of creation stories. However, Clayton has a way out. He is not arguing that parents cannot impose their comprehensive views at all, but that they cannot do it "in the absence of an argument from public reason" (2006: 99). Thus, even if Darwinian evolution can be depicted as partially comprehensive, it could be advanced as a scientific theory to the extent it is public reason, which is the topic of the next chapter. Though the end-state and the precondition view of autonomy suggest different ways to address the cultural coherence argument in support of PBR, both serve our purposes here. A strict Rawlsian reply to Plantinga, however, remains closer to the first view.³²

Finally, a third objection to the way in which Plantinga, Burt and others articulate the argument can be stated. It goes as follows: even if cultural coherence were a fundamental good to be encouraged and preserved, it is often taken for granted that the fundamental commitments that should be followed within the family are those of the parents, and never the other way around. It is an assumption that makes chronological sense, but it is not philosophically obvious. As Brighouse and Swift have pointed out, the argument for cultural coherence does not give the parents' beliefs any incontestable priority "to be the ones that are shared and, as shared, to be those shaping the relationship" (2014: 156). If this objection is sound, the flag of cultural coherence cannot be raised by the parental side to petrify their beliefs. In itself, the value of cultural coherence does not preclude the possibility that parents learn from their children. Cultural coherence does not need to be unilaterally imposed. In principle, it can be the result of cross-learning, which is always a negotiated and dynamic familial experience.

Probably, the autonomy-fearing parent who above all wants his/her child to lead the *right way of life* will not be satisfied with these conclusions, not even if they are offered the most permissive end-state view. Such a parent will insist on PBR. However, to these parents, liberalism gives a substantive response: an autonomy-enabling education is every children's right. That said, it is not necessarily problematic if youngsters decide to live a heteronomous life when they reach adulthood. For that to be politically permissible, they should have had the chance to do otherwise. In other words, liberals are mainly satisfied with a formal

³²Recall that, to Rawls, the political principles of justice "do not inform us to raise our children, and we are not required to treat our children in accordance with political principles" (2005: 470).

education that seeks to develop in every student a *capacity* for autonomy, even if the exercise of such capacity leads to the rejection of autonomy in a more comprehensive sense.³³ Plantinga's PBR, unfortunately, runs afoul of that basic goal of liberal education. In his scheme, the student's right to a liberal education as described in this section would be truncated if the child is born into an autonomy-obstructing household.

3.3 The Good of Diversity.

Some political theorists - perhaps with William Galston as a leading contemporary figure - believe that liberalism is about respecting diversity. They contend that *Yoder vs. Wisconsin* rightly ruled in favour of the Amish because liberalism is above all about toleration of different lifestyles and worldviews. Indeed, they argue, society as a whole is enriched by pluralism. To some extent, Plantinga's challenge can be articulated along the same lines: if diversity is to be preserved, then every citizen party to the contract should have the right to seal their children from unpleasant scientific truths that could undermine their original allegiances. In the Millian spirit that rejects the tyranny of sameness, some might argue that instead of uniformity and assimilation, a liberal education should aspire to have society's cultural and religious variety freely deployed. If that is the case, perhaps the right way to deal with CC is through the accommodation of different religious sensitivities into the curriculum and the exemption of children with creationist backgrounds from otherwise mandatory teachings.³⁴ This diversity-based narrative is compatible with both the notion of parental

³³This is a point made by Laborde in her assessment of the hijab controversy in France. Advancing the notion of critical republicanism and its core principle of non-domination, Laborde explains that this principle does not require "that individuals break free from their religious or communal attachments; nor does the ideal imply that the good life is a life of autonomy. The autonomy critical republicans value is more akin to a basic capability: a skill which, up to a threshold, is essential to the good life, but which, above the threshold, individuals do not have to develop further, let alone to exercise fully" (2006: 370-371). Liberal-republicans such as Laborde believe that one thing is the inculcation of autonomy-related skills and another thing is an injunction to place autonomy at the centre of one's life. They only defend the former. This version of autonomy, then, does not prevent us "from enjoying... the good inherent in our pursuit of a diversity of goals and commitments, including non-autonomous ones" (Laborde, 2006: 373). This is consistent with the non-comprehensive view of autonomy that we have defended here as liberal educational goal.

³⁴The literature on religious exemptions is vast. It usually refers to those laws and policies that create a substantial burden on religious people. To grant exemptions, theorists search whether the burdened practice can be considered both obligatory and central to a specific religious denomination. As we have already seen, the kind of burden that the teaching of Darwinism puts on religious shoulders will depend on the theological understanding. But, as we made clear in the first chapters of this work, there is room to argue that a naturalistic account of our origins can in principle represent such a burden. Here, the burdened practice is the transmission to one's children -via the educational system- of creationist ideas as factually accurate or scientifically probable. To my mind, while this practice might not be articulated as a religious *obligation* -such as displaying certain religious ornaments or attending specific services- it might be plausibly presented as *central* to some theistic doctrines. Nonetheless, claims to exemptions are usually rejected when the state is found to have a 'compelling

choice and the value of cultural coherence within communities. Nonetheless, its underlying rationale is neither parental authority over education nor the welfare of children as such. It is about our duties of toleration in multicultural societies.³⁵

However, diversity-based liberalism is far from uncontroversial, especially when it is raised as an educational beacon. In recent decades, it has been vocally rejected by a large group of political theorists that hold that public education in liberal democracies should be chiefly about shaping a common civic morality. Too much emphasis on diversity, they warn, is misplaced. As Stephen Macedo has stressed, “a liberal democratic polity does not rest on diversity, but on shared political commitments weighty enough to override competing values” (2000: 134). There is nothing wrong with diversity and difference as such, Macedo explains, but they are “no substitute for a shared public morality” (2000: 134). Therefore, he goes on to assert, “assimilation is not to be despised; it is rather to be embraced -if we assimilate in non-repressive ways and toward justifiable values” (Macedo, 2000: 134). As the dispositions that characterize competent liberal citizenry do not come about *naturally*, these authors emphasize the irreplaceable role that education plays in providing these crucial tools for citizenship.³⁶

What these authors are claiming is that we should accept that the cognitive skills and factual knowledge required to build a sense of liberal citizenship might turn out to be difficult to reconcile with some people’s comprehensive beliefs. The case of *Mozert* is illustrative. Here, devoted parents were battling against the teaching of a programme of basic democratic values - e.g. gender equality - because they understood them to be antithetical to some of their most

interest’ in the application of the law or policy in question. Although I have avoided to treat my case-study within the framework of the exemption literature, I do not ignore that it might fit. Thus reframed, the question is whether the liberal state has a ‘compelling interest’ in teaching evolutionary biology.

³⁵ It is remarkable the way in which the discourse from the Religious-Right coincides at this point with some of the insights of the Multiculturalist-Left. For instance, the conservative former judge Michael McConnell (1991) has tirelessly argued against secular homogenization in public schools. Instead, he has advocated for a voucher-system that would accomplish two goals: respect for parents’ free choice and recognition of multiculturalism in society. Stephen Carter agrees. As different communities have different and “competing systems of discerning truth”, he believes that the inclusion of some forms of creationism in the curriculum would be a healthy recognition of the fact of epistemic and cultural pluralism (Carter, 1994: 168-176).

³⁶ “Were students ready for citizenship”, Amy Gutmann has suggested, “compulsory schooling would be unjustifiable” (1999: 94). In the same page, Macedo states that “good citizens are not simply born that way, they must be educated by schools and a variety of other social and political institutions” (2000: 16).

cherished religious convictions, such as fixed family roles. However, for civic-minded liberals, the former should trump the latter.³⁷

Plantinga and the creationists do not reject that civic purposes are important. However, they relegate them to be either innocuous or subordinated to the parent's comprehensive beliefs. In case they are innocuous, there is no need to activate PBR. But if they are not innocuous, civic purposes would be displaced by PBR. Civically-minded liberals refuse this arrangement. From their perspective, moulding competent citizens and creating conditions for mature democratic deliberation are non-negotiable aims of public education. Exemptions and opting-out schemes in the name of PBR defeat such a purpose. Thus, PBR should be rejected from the standpoint of civic liberalism. Furthermore, these liberals do not attempt to defend themselves from the charge of soft indoctrination. They do not take their theory of civic virtues to be fully neutral between comprehensive views or lifestyles within a pluralistic society.³⁸ On the contrary, this mild form of democratic indoctrination would be acceptable insofar as it is responsive to what Nomi Maya Stolzenberg has dubbed the "republican challenge".³⁹

³⁷ There is nonetheless an important difference between *Mozert* and CC. As the legal scholar Nomi Maya Stolzenberg rightly points out, the main allegation of the parents in *Mozert* "was not exposure to a particular hostile value or belief, such as Darwinism, but rather exposure to diversity of values and beliefs..." (1993: 591). In *Mozert*, the mere exposure to alternative worldviews in formative years was interpreted by the parents as a way of value-inculcation, and therefore as a failure of neutral treatment. Instead, contemporary creationists demand the opposite: they want exposure to different views about the origin of life, so that Darwinism is not the only game in town. While in *Mozert* the pedagogical technique of mere exposure was deemed a form of indoctrination, creationist groups argue that the only route to avoid unjust indoctrination in the creation vs evolution controversy is precisely to show competing hypotheses. Whereas parents in *Mozert* were fighting against the presentation of their religious convictions as matters of subjective opinion, creationist parents are fighting against the presentation of Darwinian as a scientific truth instead of as a matter open to debate.

³⁸ Amy Gutmann has argued that "all sophisticated liberals recognize the practical limitations of neutrality as an educational ideal: it is, in its fullest form, *unrealizable*... Democratic education is not neutral among conceptions of the good life, nor does its defense depend on a claim to neutrality" (1999: 34-35, 46). Stephen Macedo has defended a version of liberalism that is determined "to promote specifically political virtues... with unavoidable non-neutral consequences for the religious beliefs and ways of life that flourish in our regime" (2000: 12), adding that "any form of civic education would have non-neutral effects on those religious beliefs that conflict with the civic morality" (Macedo, 2000: 71). Neutrality would be, in his words, a *mirage*. In Rawls's own view, the accusation that requiring children to undergo a *political* education amounts to indoctrinate them into a comprehensive liberal conception should be seriously addressed, mostly because it *can* have such an effect. But, Rawls replies, "the only way this objection can be answered is to set out carefully the great differences in both scope and generality between political and comprehensive liberalism" (2005: 200).

³⁹ According to Stolzenberg, "the republican vision of interdependence between ruler and ruled thus supplies one republican rationale for *estopping* participants in the larger society from claiming protection against further assimilation" (1993: 646). For this liberal-republican perspective, therefore, exposure to diversity is not meant to be neutral. Rather, it is meant to be "the essence of a civic education, and opting-out prevents and thus deprives children of the political ability that is its intended result" (Stolzenberg, 1993: 650).

It is important to note that civic-minded liberals are not repudiating the fact of pluralism. On the contrary, they argue that some key political virtues are best developed when children encounter contrasting ways of life and dissimilar world-pictures within their ordinary experience. They are suspicious that democratic values such as tolerance and respect for difference can be properly inculcated in closed communities where no diversity of beliefs and lifestyles is allowed. It is unquestionable that if these communities remain culturally isolated and civically impermeable, society remains highly pluralistic in the aggregate. Such society will contain greater diversity within it than a society that has undergone a process of political assimilation. However, liberals reply that the civic values that characterize a healthy democratic polity are somehow elusive if each cultural tribe asserts its right to live segregated from the others. In any case, these liberals will keep their homogenization objectives minimalistic. They do not require internal diversity in every social unit. Churches and certain voluntary associations, for instance, should not be coerced to be internally pluralistic. On the one hand, this is because forcing each social unit to be internally pluralistic defeats the special purpose of each of these intermediate bodies. On the other hand, it is because forcing each social unit to be internally pluralistic would require rather authoritarian measures. However, civic liberalism celebrates the functional role of internal diversity within the larger system of public schooling. Here, students can develop a sense of civility drawn upon a conscience of pluralism. It is precisely because we live in pluralistic societies that we need to talk about what is civically common. In this context, liberal education is supposed to instil what we take to be shared political commitments. Therefore, if we are too flexible in the face of pleas for accommodation and exemptions, we could risk failure in the essential task of “transforming various forms of diversity in liberal democratic directions” (Macedo, 2000: 200)⁴⁰.

To conclude, the three presented objections to OPS fail against the background of what liberals used to take as the fundamental aims of education. To begin with, they reject parentarchy. Then, both autonomy-based liberals and civically-minded liberals agree that the

⁴⁰ Precisely, Macedo asks whether people should have a “moral or constitutional right to opt out of reasonable measures designed to educate children toward very basic liberal virtues” when those measures would make it harder for parents to pass along their religious beliefs. He thinks they should not enjoy such a right to the extent “it would provide religious fundamentalists with a right to shield their children from the fact of reasonable pluralism” (Macedo, 2000: 202). In a slightly different sense, Brian Barry has resisted the homogenization critique by arguing that “it is utterly crass to reduce the opportunity to become acquainted with the greatest achievements of the human mind and spirit to nothing but reinforcement of the dominant secular culture” (2001: 245).

religious and cultural background of the student is no valid reason for curtailing his or her educational prospects.

4. Science, Autonomy and Citizenship.

Contrary to Plantinga's position, this chapter has defended the claim that hypothetical rational individuals under the Rawlsian veil of ignorance would sign up for a right to a set of basic educational goods in their formative years, regardless of their parents' comprehensive beliefs. I have also suggested that these basic educational goods should cover an appropriate degree of scientific literacy, among other skills and knowledges that should be acquired through compulsory schooling. The previous section has described what the literature takes to be the fundamental aims of liberal education: the development of a capacity for autonomy and the instilment of civic values. The link that remain to be made is between scientific education and these paramount liberal aims. If scientific education - comprising the general methods and outstanding conclusions of science - is not relevant to the attainment of these liberal ends, there might be still a way to call into question my preliminary claim. Put differently, if it is possible to endorse a general scheme of mandatory education that is both autonomy-enabling and civically-minded without endorsing the scientific teaching that Plantinga objects to, then perhaps the scientific module is disposable. PBR, after all, might survive, although in a narrower version, because the original version will not stand unscathed after the inclusion of autonomy and civic considerations. PBR would then survive as PBR₁: 'Each of the citizens party to the contract has the right not to have comprehensive beliefs taught to her children that contradict her own comprehensive beliefs, unless the former beliefs are essential for an autonomy-enabling and democratic education'. If that is the case, we could still recourse to Plantinga's proposal: teaching both Darwinism and creationism *conditionally* to the students' respective epistemic baselines, provided that other mandatory subjects will be covering the essential goals of a liberal education.

This is the suggestion made by Shelley Burt. She explicitly recognizes autonomy and democratic citizenship as the type of values that a liberal education should pursue. However, in the case these values could be pursued through accommodations and opting-out strategies, Burt argues that we should seriously consider "tailoring the curriculum to fit fundamentalist religious views" (1994: 62). Her claim is that "parents who seek to ground their children in

more religiously centered approaches to personal and political reflection need not be treated as necessarily harbouring a goal at odds with a proper education for liberal citizenship” (Burt, 1994: 66-67). Certainly, she notes, those religious beliefs and practices “that truly do deprive children of the opportunity to be informed, educated citizens” will not be permitted (Burt, 1994: 68). But whenever the same educational aims can be obtained by less stressful means for highly religious parents and their children, then those means should be preferred. In the specific case of the mandatory biology course, Burt has argued that children *can* oppose their parents’ efforts to exempt them from it - which is an implicit recognition of the importance of the science module - but at the same time “they would not have a similar standing if their parents simply requested an alternative biology textbook” (1996: 432). Unfortunately, she does not clarify whether the textbook in question can take a creationist hard-line, such as Harun Yaya’s *Atlas of Creation*.⁴¹ In any case, Burt is on Plantinga’s side: having different textbooks for students from different backgrounds is consistent with the idea of teaching evolution and creationism *conditionally* to the students’ prior religious commitments.⁴²

Thus, the crucial question is whether scientific literacy, in terms of reasoning skills and fundamental knowledge, belongs to the kind of opportunities that are fundamental for a liberal education. We will discuss this in the next section.

4.1 Science and Autonomy

For our purposes, autonomy will be understood as the basic rational capacity to form, revise and pursue a conception of the good, whatever it might be. Liberal education, it is said, should train this capacity. A fundamental part of such a training is the exercise of critical thinking, which takes place in both practical and theoretical reasoning, as Kant used to distinguish them. Scientific reasoning belongs to the theoretical, for it is speculative, detached and universal. Thus, scientific reasoning – as the ability to accurately represent the factual world - is part of critical thinking broadly conceived. Insufficient training in scientific reasoning means that critical thinking remains to some extent truncated. This is because weak observational skills and low inferential capacities lead to distorted pictures of reality. In

⁴¹ Though I intuit she is referring to the already controversial *Of Pandas and People*, the US school-level textbook that first espoused the ID thesis and presented various polemical arguments against Darwinian evolution.

⁴² Burt provides a similar argument to defend the outcome in *Yoder* while she rejects any alleged parental right “to raise children lacking the mental resources to participate competently in democratic decision-making or engage in critical reflection about one’s values” (1996: 415), she disputes that a couple of extra years of high schooling -the issue at stake in *Yoder*- were truly necessary to these developments and achievements.

serious cases, this might facilitate states of phenomenological false consciousness. Moreover, to put a person in a situation of objective ignorance about factual features can be represented as a form of deception akin to domination, as in the medicine-man who fools his patients or the phony who sows paranoia by allegedly predicting natural disasters. In this regard, Richard Dawkins has maintained that communicating falsity over truth - i.e. creationism over evolution - to children is indeed a form of harm.⁴³

Thus presented, scientific literacy goes in hand with an autonomy-enabling education. A fine-tuned compass to navigate the natural world should lead to better outcomes than a distorted one. To put it differently, the quality of our choices in life will depend to some degree on the quality of our reasoning and the knowledge we gather. A systematic training of the capacity to acquire, store and enlarge such knowledge should result in better intellectual processes aimed at matching our sensorial experience with the ontology of the material world. Therefore, if we accept epistemic realism as a premise, scientific reasoning and scientific conclusions become relevant to develop a capacity for autonomy.

If the previous argument is sound, the teaching of hard-line creationism as a plausible alternative to Darwinian evolution will be difficult to reconcile with the requirements of an autonomy-enabling education. The case would not be as straightforward with subtler forms of creationism. It seems too strong to say that simply admitting the possibility of non-naturalistic hypotheses in cosmic history goes against the facilitation of autonomy. But as far as theories such as ID cannot gather enough evidential support to escape the charge of ostensible falsity, there is little reason to believe that they are contributing to an autonomy-enabling education either.

Drawing on these autonomy-based concerns, some educational theorists and philosophers of religion - among them Nel Nodding (1993), Francis Schrag (2001) and Warren A. Nord (2003) - have argued that teaching creationism alongside Darwinism is indeed a suitable way to foster autonomy. Insofar as schools are places that should encourage people to think for themselves, it would be counterproductive to impose a single view on the thorny issue of life origins. On the contrary, it would be better to provide students with different views and let them to decide. If the muscle of autonomy is exercised through exposure to alternative views,

⁴³ Dawkins endorses the psychologist Nicholas Humphrey's remarks in favour of limiting parental rights when it comes to define what counts as truth and falsehood: "Children's have a human right not to have their minds crippled by exposure to other people's bad ideas -no matter who these other people are" (quoted in Dawkins, 2006: 366). Elsewhere, popular scientists such as Bill Nye and Lawrence Krauss have expressed their concerns about the teaching of creationism, which they consider to be a form of child abuse.

the argument goes, creationism should be taught too. Only in this way we would be fostering critical thinking. Interestingly, neither Nord nor Schrag attempt to save creationism from its scientific weaknesses. That is beside the point. After all, the whole idea of developing autonomy is to strengthen the ability to identify true from false. They believe that creationism should be taught insofar as creation stories represent an integral feature of religious belief. Thus, the critical thinking that these authors have in mind does not refer to the careful assessment of two equally probable scientific theories, but to the reflective weighting of a secular and a nonsecular account over the same subject matter.⁴⁴ This, Nord emphasises, should be done within the science classroom, because banishing creationism to social studies modules would send the message that factual claims can only be dealt by scientifically secular means.

There are different ways to address the previous claim. According to Warnick and Fooce, an autonomy-enabling education is about presenting the best version of competing arguments for students to exercise their capacities of critical thinking. However, when religious narratives are placed in the context of science, they are forced to assume the features of the scientific project - which is about “making clear and distinct references about a single, independent reality” (Warnick and Fooce, 2007: 364). This, the reply goes, is far from the best scenario for religion to be assessed. For these authors, religious creation stories should be understood as ‘symbolic’ and never as ‘referential’ or ‘representational’. The latter is commonly the case in modern thought and especially in science. Taking sacred narratives as ‘referential’ or ‘representational’ is to distort them, because “they are taken as a possible representation of reality rather than as incarnating the form that gives us access to meaning” (Warnick and Fooce, 2007: 366). Under these unimpressive lights, religious narratives will

⁴⁴ Nord’s claim is that “public education is profoundly illiberal in failing to include religious interpretations of the subjects that comprise the curriculum. Indeed, it actively discourages critical thinking by failing to provide students any critical distance on the secular ways of thinking and living that they are taught to accept uncritically in their various courses... to filter those religious voices out of the curricular conversation is a profoundly illiberal act” (2003: 48, 47). In turn, Schrag argues that taking autonomy seriously means to “guarantee children of religious parents exposure to a secular version of creation and children of secular parents exposure to religious versions of creation... a liberal education, especially one committed to nurture of individual autonomy, may *not remain exclusively secular*” (2001: 220). In a similar vein, the philosopher of education Nel Noddings (1993) has argued that both creation and evolution should be taught in science classes, and let students weight the evidence and decide. To Noddings, religious and metaphysical issues should be treated whenever they arise, whether in science, math or any other subject.

surely look weak and primitive. Therefore, exposure to creationism does not foster autonomy insofar as it presents an all-to-easy to refute version of a religious worldview.⁴⁵

Despite its sensibleness, this work cannot take the above route. An important pillar of my overall argument is that theistic religions do make factual claims. Thus, theistic believers of a realistic cast of mind are theologically warranted to hold some religious claims as crucially representational. I will not reject most of Warnick and Fooce' argument: it is likely to be true that religious narratives will face a tough time following the epistemic rules of science. It might be true that their overall plausibility will be undermined under such an unfavourable lens. It is possibly true, finally, that creation myths are far from religion's best facet to submit to the student's critical discussion. But none of these considerations entails that creationists are out of their mark in aiming at the science curriculum to discuss factual controversies about the origin and development of life. As we have already suggested, a liberal state should not be in the business of making too many theological judgements about what is true or false religion. It would be a violation of religious neutrality, for instance, to settle the issue in favour of premodern "symbolism" and against modern "referentialism".⁴⁶ Warnick & Fooce suggest that the opposite can be also true: that upholding modernist interpretations is biased against a certain understanding - the correct one, in their eyes - of religion. They acknowledge the obstinate fact that many believers in monotheistic cultures lean towards representational understandings of several religious claims. But they believe that this empirical fact matters only from the standpoint of democratic theory, not liberal theory, and therefore it should not be relevant when discussing autonomy as a liberal educational aim.⁴⁷

I believe they are missing the point. By allowing religious narratives that are advanced as factual claims into the scientific competition, liberal theory is not taking sides between theological models. Its role is much more limited: it requests all contenders - secular and nonsecular - to present their best cases to describe and explain spatiotemporal phenomena. The most scientifically proficient account wins the day, and hence qualify as scientific

⁴⁵ Warnick and Fooce conclude that liberal education demands exposure to alternatives, "but bringing religious narratives into science does not expose students to alternatives in a deep way, and it seems to distort the religious perspective" (2007: 370).

⁴⁶ Here we find an interesting semantic mixture. Warnick & Fooce refer to premodern "symbolism" as the type of reading that nowadays is preferred by *liberal* religious denominations, whilst modern "referentialism" would be associated with *conservative* religious denominations. I will come back to this conceptual distinction in this thesis' closing remarks.

⁴⁷ According to Warnick & Fooce, "if a democratic majority feels that sacred texts are making referential claims and believes that these claims are important to include in the science classroom, then that is sufficient grounds for a democratic educator to include creation accounts" (2007: 373).

(provisional) truths. Then, it might even secure a place in the science curriculum. The crucial point is that liberalism is not discarding religious creation stories because they do not represent the best part of the religious experience, but because they are not scientifically accurate. Ultimately, herein lies the reason why the autonomy-based argument in favour of creationism fails. It contains no significant exercise of critical thinking to contrast a theory with overwhelming evidential support against a set of views ranging from duly surpassed to simply farfetched. To some extent, Warnick & Foose seem to accept this conclusion. Regarding ID, and not Biblical creationism, they argue that in the sense that such a thesis does not entail an overt distortion of religious texts, ID could, in principle, still work for the autonomy-based argument. As with ID “the designer becomes a mere hypothesis in a chain of scientific reasoning and is thus thoroughly secularized... ID theory will promote autonomy only as much as the consideration of rival scientific theories will promote autonomy” (Warnick & Foose, 2007: 375). Hence, the autonomy-enabling claim in the context of a scientific debate would require rival sides in a symmetrical position, not in the sense of metaphysically symmetrical but scientifically symmetrical. However, I do not think that even ID could be presented in such a way before mainstream Darwinism.

Notwithstanding the above discussion, scientific education is at the service of an autonomy-enabling education not only because it provides objective factual knowledge that can free us from ignorance and domination, but especially because it helps to develop a particular mindset, characterized by a series of methodological virtues. The SEB that Plantinga calls into question is a very useful tool for assessing competing claims of a non-normative character. Instead of resting on first intuitions or well-entrenched prejudices, it encourages the agent to judge on evidential grounds. This should have an effect in developing the dimension of autonomy that refers to the capacity to examine presently held beliefs and commitments, because it is a capacity that mirrors the scientific virtue of revising currently held knowledge. As Plantinga rightly points out, no scientific truth is forever secure. On the contrary, science is caught in an endless trial and error process. It is the same with autonomy. In Meira Levinson’s view, openness to revising one’s life commitments means that we are “willing to subject our arguments and intuitions to the demand for proof” (1999: 60). In this sense, science at its best is an antidote for what we might call dogmatism, an antidote much needed whenever students carry pervasive prior commitments. Minds that are trained to distinguish good from poor evidence - a crucial lesson that the scientific curriculum should

deliver - are better equipped to resist dogmatic indoctrination, as we should expect them to endorse factual claims that can be held evidentially and not just for deference to authority.⁴⁸

In sum, the ideal scientific curriculum is seeking two fundamental objectives. On the one hand, it should be able to provide an accurate picture of material reality through the transmission of trustworthy knowledge. On the other hand, it should aim at irrigating the epistemic virtues of the scientific method.⁴⁹ This is not to say that science is the only way to the truth. Liberalism as such does not embrace Scientism. A liberal education that fosters autonomy will prefer evidence-based epistemologies because these appear to be essential for self-reflection and critical inquiry, not because they lead us to the inexorable truth.

4.2 Science and Citizenship.

Civic-liberals oppose the introduction of creationist views into the science curriculum. But, unlike other liberal theorists, they do not downplay the fact that evolutionary theory can pose a moral conflict to religious parents.⁵⁰ They think that this outcome is to some extent unavoidable given the fact of pluralism and the substantive aims of liberal education. For Gutmann, this is precisely the crux of the issue: while the scientific case against creationism is straightforward, the democratic case is much more complex (1999: 192). Thus, to work out a resolution-frame, she aims to identify the epistemic properties that make Darwinian evolution a much better thesis than its competitors. In Gutmann's words, "religions that reject evolution as a valid scientific theory also reject the secular standards of reasoning that make evolution clearly superior as a theory to creationism" (1999: 102). In this sense, she agrees with Plantinga's interpretation of the problem: the conflict does not revolve around evolutionary theory alone, but is about the set of criteria that we use to adjudicate on rival

⁴⁸ As Levinson argues, "children are most likely to develop the capacity for autonomy in a community whose normative structure is itself autonomy-driven, i.e. in an environment that is explicitly committed to and structured by the norms of critical inquiry and reflection, evidential justification and mutual respect and toleration... This community, I suggest, best describes the ideal liberal school" (1999: 61). In the same vein, Brighouse and Swift contend that, "broadly speaking, the capacities involved in critical reflection help us to live autonomously. We can learn methods for evaluating the truth and falsehood, or relative probability, of various claims about the world" (2014: 165).

⁴⁹ As philosophers of education Mike Smith and Harvey Siegel put it, the primary aim of science education is fostering the student understanding "of the content of science—the claims and theories of science, the current best explanations of how things work- as well as the nature and methods of science" (2004: 562).

⁵⁰ To Amy Gutmann, for instance, "if one embraces the principle that moral education is the domain of the family rather than the state, then the basics must not include the teaching of history or biology (insofar as it includes evolution) any more than sex education or racial integration" (1999: 6). Thus, Gutmann links Darwinian evolution with the moral dimension of education, which is consistent with our claim that the boundary between scientific facts and ethical values is sometimes porous.

factual claims. Gutmann calls these criteria “secular standards of reasoning”, to roughly refer to scientific standards of evidence and verification - much in line with what we have called SEB. According to Gutmann, these “secular standards of reasoning... constitute a better basis upon which to build a common education for citizenship than any set of sectarian religious beliefs” (1999: 103). These standards are better because they are “both fairer and a firmer basis for peacefully reconciling our differences” (Gutmann, 1999: 103). They are fairer, I assume, as they do not consider our vested interest, confirmation biases and diverse backgrounds. Finally, they are firmer, I imagine, as their rules are settled and for everybody to recognize them. In turn, Brian Barry rejected hard-line creationism not because it was false, but because “there is no way of arguing for it that does not violate the most elementary canons of rational thought... [and] the possibility of democratic government depends upon shared criteria of rational discourse” (2001: 247-8). Therein is the link between scientific and civic education. If one of the aims of liberal education is developing shared intellectual skills for competent citizenship, then a standard of reasoning such as SEB will be needed. From such a standard, the scientific contents that make up the curriculum emerge.

Therefore, the civically-minded liberal case for a proper scientific education rests in the assumption that it will foster a way of thinking that enhances our capacity for democratic deliberation. Put differently, it rests on the hope that those who learn to tell the difference between strong and weak evidence are better equipped for the public forum. Among other features, this scientific mindset is the breeding ground for citizenship that is curious, informed and fundamentally open-minded about politically relevant issues whose resolution hinges on scientific inputs. Obviously, this does not mean that every citizen should become a scientific expert. It means instead that citizens should have a sense of the scientific discussion. This might entail that they should be more receptive to the recommendations and warnings of the scientific community in the decision-making process.

This is a topical matter in contemporary democracies: an important part of the population believes that climate change is a hoax; some public money goes to fund homeopathy instead of other well-tested medical procedures; parents refuse to vaccinate their children because they fear autism, to mention just a few democratic controversies that are not strictly scientific. In this respect, Arneson and Shapiro suggest that, among other things, “to be able to participate competently in democratic decision-making, voters should have an adequate knowledge of contemporary science in its bearing on public policy issues” (1996: 376). More recently, Lawrence Torcello has argued that “civic engagement requires a minimal level of

[scientific] inquiry sufficient to be an informed voter” (2011: 202). In the same sense, as we will see in the next Chapter, Elizabeth Anderson (2011) has explained that citizens have at their disposal a series of simple resources, especially since the massification of the internet, to catch up with the scientific consensus.

Therefore, the case of civic liberals can be summarized as follows:

- (i) Parents cannot prevent their children from acquiring the cognitive and discursive skills necessary for competent citizenry;
- (ii) Competent citizenry depends on shared standards of reasoning, which can be promoted, to some extent, through scientific education;
- (iii) Parents cannot prevent their children from obtaining mainstream scientific education.

All in all, the Plantinga-Burtt connection is defeated. It could indeed be prudentially advisable to exempt students from religious backgrounds from some scientific teachings, but the cost would be significant against the benchmark of an ideal liberal education that aims to develop a capacity for autonomy and a sense of shared civic rationality.

Summary

Among the most celebrated justificatory devices advanced by contemporary political theory is the Rawlsian contractarian scenario, here reframed as the OPS. The philosopher of religion Alvin Plantinga has relied on this typically liberal framework to propose a parental basic right to be agreed under the veil of ignorance: each of the citizens party to the contract has the right not to have comprehensive beliefs taught to her children that contradicts her own comprehensive beliefs. From this PBR, Plantinga offers an alternative to solve CC: that neither Darwinism nor creationism are to be taught as the settled truth on the question of origins, but their truth should be assessed *conditionally* to the students’ religious backgrounds. Therefore, children from atheistic families will learn that Darwinian evolution is correct whilst children from theistic families will learn that some creationist account is correct.

However, Plantinga’s challenge misunderstands two important features of the Rawlsian OPS. First, that the hypothetical agent under the veil of ignorance is not intended to be a parent who is thinking about how to protect his/her beliefs. If a parent, he/she must act in a fiduciary way, i.e. with the well-being of his/her children in mind. Alternatively, he/she

should think in the kind of education that she would rationally choose if he/she were a dependant, under conditions of uncertainty about his/her familial beliefs. Second, that OPS allocates fundamental goods to live as free and equal people. Among those goods, many authors suggest there is education. Within these educational goods, a degree of scientific literacy would be surely encompassed. In turn, we cannot plausibly talk about scientific literacy without covering the most fundamental idea in life sciences, i.e. Darwinian evolution. Thus, OPS actually dictates that each of the citizens party to the contract will have the right to a set of basic educational goods in their formative years, regardless of their familial comprehensive beliefs.

Three ways to support PBR were presented with an allegedly liberal base: the idea of strong parental rights, the good of cultural coherence within communities, and the value of diversity. The three of them were rejected as follows: first, a liberal order takes very seriously the rights of persons even if they are children, so a children-centred approach will be preferred when it comes to education. Second, the good of cultural coherence should never trump the right to an autonomy-enabling education, a pillar of liberal education. Third, the value of diversity is to be praised but it cannot serve to prevent the instilment of common civic values and shared standard of reasoning.

Finally, in the face of accommodation claims and opting-out strategies put forward by creationist-friendly philosophers, the last section proved the connection between the paramount aims of liberal education - the development of a capacity for autonomy and a range of civic purposes - and the ideal scientific education in terms of knowledge and reasoning abilities. Accordingly, to deprive students of an education that reflects the current scientific consensus should be deemed unacceptable from a liberal perspective, insofar as it deprives them from relevant cognitive tools for developing a sense of autonomy and a sense of democratic citizenship. This conclusion leads to the rejection of the aforementioned accommodation claims.

The teaching of creationism should then qualify as unjust under OPS. Plantinga's challenge should be therefore rejected. Evolutionary theory might have the philosophical implications that the substantive CC denounces, but from this it does not follow that creationism should be included in the curriculum.

VII

The Scientific is Political

The Public Reason Strategy

In the previous chapter, we inquired over how the CC would fare under the Rawlsian veil of ignorance. Contrary to Alvin Plantinga's suggestion, we found that individuals would choose, among other primary goods, a set of educational goods which include scientific literacy. This should cover the essential knowledge and the ways of reasoning that characterize modern science, even if some of these methods and conclusions happen to be unpalatable to certain familial backgrounds. This arrangement, we concluded, is what we owe to children as a matter of justice. In this chapter, we will explore another Rawlsian justificatory device: the idea of public reason. In its already canonical formulation, the exercise of political power is only legitimate when it can be justified to all citizens. The question at hand is whether the type of scientific education that children are bound to receive can be justified within the framework of public reason. I will call this the Public Reason Strategy (PRS).¹

When loosely describing the kind of reasons that should be regarded as public, Rawls dismisses any appeal to disputed comprehensive doctrines but supports appeals to "presently accepted general beliefs and forms of reasoning found in common sense, and the methods and conclusions of science when these are not controversial" (2005: 224). Accordingly, the knowledge and ways of reasoning that characterize modern science should not only be included in the basic set of educational goods that an individual would choose in the hypothetical contract but, perhaps more relevant, they are entitled to a privileged place within the realm of political justification; while appealing to controversial metaphysical beliefs is

¹ Political theorists often debate over the relation between both justificatory avenues within the Rawlsian framework. I will not review such a debate. My general view on this issue is that the normative projects embedded in *A Theory of Justice* and *Political Liberalism* are far from contradictory. I take *Political Liberalism* as the best testimony of Rawls thinking very responsibly about the implications and eventual shortcomings of his previous work. In this sense, the fundamental liberal question moves from justice to legitimacy, which takes the fact of pluralism seriously and therefore aims to justify the exercise of political power to people with different worldviews. This method of grounding legitimacy shares the same normative commitments that drive the search for the principles of justice, namely, the notion of fairness. This might account for the slight change in meaning of the formula *justice-as-fairness*: from the comprehensive moral view expressed in *A Theory of Justice* to the purely political conception that we found in *Political Liberalism*. However, fairness continues to be the guiding principle of Rawlsian liberalism.

ruled out, invoking uncontroversial scientific methods and conclusions is encouraged. Scientific reasons are then public reasons. As Rawls did not provide a systematic argument for granting science this special status, the following pages will explore whether such status is consistent with the overall narrative of political liberalism. If it is, we are entitled to apply PRS in curricular debates. Concretely for our case, it will be politically legitimate to teach Darwinian evolution - as a noncontroversial conclusion of science - to the exclusion of alternatives such as creationism.

However, several objections have been raised against the notion of scientific reasons as public in the Rawlsian sense. This Chapter will proceed as follows. Section 1 will present the case for science as public reason, explaining in which sense the epistemic virtues of the scientific way of reasoning mirror the underlying values of the liberal project of public justification. Section 2 addresses and responds to three strictly internal objections that political theorists have raised: (i) that scientific reasons are hardly applicable in matters of fundamental justice, where public reason is supposed to operate; (ii) that the reason of the scientific community is a paradigmatic case of an associational, and thus non-public, reason; (iii) that the non-controversiality requirement rules out scientific reasons that are rejected by some citizens, which is indeed the case of Darwinian evolution. Section 3 will cover three general objections targeting the relation between science and the promises of political liberalism: (i) that granting scientific reasons a privileged epistemic status amounts to scientism, which is a comprehensive doctrine; (ii) that political liberalism is supposed to be truth-agnostic, which is incompatible with the notion of scientific “plain truths”; (iii) that encouraging scientific reason through public education reveals a perfectionist - and therefore not neutral - goal. Drawing on Plantinga’s work as well as on postmodernist arguments, section 4 presents a general objection against science as public epistemology, and thus against its privileged status in the framework of public justification. Section 5 will finally argue that the Rawlsian version of political liberalism relies on a specific understanding of the relation between scientific reasoning and common reasoning, which explains why a seemingly inaccessible intellectual endeavor such as the production of scientific knowledge should nonetheless be regarded as public reason. From this understanding, I shall claim, all the pieces fall into place: liberals can defend the role of science as public reason to the extent that science is not an esoteric knowledge-generator but a shared and overlapping capacity.

1. The Case for Science as Public Reason.

As briefly remarked, Rawls realized that some of the principles arrived at in *A Theory of Justice* were difficult to justify to people holding different comprehensive views. A search for a purely political conception to that end began, away from metaphysical speculation or strong assumptions about the meaning of a good life. Only such a modular conception could legitimize the exercise of coercive power over a pluralistic society. In this sense, the political conception is said to be freestanding, that is, independent of any wider comprehensive religious or philosophical doctrine. That is the project of *Political Liberalism*. Consequently, idea of public reason emerges, which is the reason of individuals *qua* citizens, standing in a relation of equality to each other. It is the reason directed to others to ground common political principles and institutions. Public reason, as Rawls admonishes, should be understood as an ideal conception of citizenship for a constitutional democratic regime.²

Recall that the political conception, in the Rawlsian account, is twofold: on the one hand, it prescribes the substantive principles of justice that govern the basic societal structure. On the other hand, it includes guidelines of inquiry that help us to think and decide about those substantive political issues. The former embody the values of political justice; the latter represent the values of public reason. Without the guidelines of inquiry that public reason prescribes, the political conception remains truncated. Political justice needs certain discursive conditions, certain “principles of reasoning and rules of evidence in the light of which citizens are to decide whether substantive principles properly apply and to identify laws and policies that best satisfy them” (Rawls, 2005: 224). In a Habermasian fashion, we think of public reason as entering the picture to realize the communicative dimension of legitimacy. The following is its canonical presentation:

“On matters of constitutional essentials and basic justice, the basic structure and its public policies are to be justifiable to all citizens, as the principle of legitimacy requires... in making these justifications we are to appeal only to presently accepted general beliefs and forms of reasoning found in common sense, and the methods and conclusions of science when these are not controversial. The liberal principle of legitimacy makes

²This is not the place for a full scanning of the idea of public reason. Besides Rawls’ own formulation, I will be relying in the work of two of his most recognized interpreters, namely, Samuel Freeman (2003, 2007) and Charles Larmore (1996, 2003).

this the most appropriate, if not the only way to specify the guidelines of public inquiry... we are not to appeal to comprehensive religious and philosophical doctrines -to what we as individuals or members of associations see as the whole truth- nor to elaborate economic theories of general equilibrium, say, if these are in dispute. As far as possible, the knowledge and ways of reasoning that ground our affirming the principles of justice and their application to constitutional essentials and basic justice are to rest on the plain truths now widely accepted, or available, to citizens generally. Otherwise, the political conception would not provide a public basis for justification” (Rawls, 2005: 224-225).

Thus, we have slightly different but intimately related formulations for the kind of arguments that are politically admissible. Arguably, the allusion to “presently accepted general beliefs” resonates with the idea of “plain truths now widely accepted, or available, to citizens generally”. They both refer to certain knowledge that everyone has or should have under realistic conditions. To that extent, these beliefs and plain truths are not considered controversial nor can be exclusively claimed for a specific comprehensive view. This is how the ideal of liberal fairness is realized: the justification of political power should not be based on controversial doctrines but it must be grounded on something that is for all to recognize. Put differently, the guidelines of inquiry expressing the values of public reason should point to a stock of current common knowledge. Here I also include the “conclusions of science when these are not controversial”, as they form part of this repository of actual knowledge to be resorted to articulate reasons able to ensure political justification. We might call this the *static* side of the PRS.

Crucially, we can also appeal to “forms of reasoning found in common sense and the methods of science when these are not controversial”. We might call this the *dynamic* side of the PRS, since it is not referring to current common knowledge but it concerns the epistemic conditions suitable to produce it.³ In this sense, political liberalism broadly understands science as a shared mode of inquiry and not as an esoteric generator of knowledge claims. The consequence of this is that the procedures of science - and not only the outcomes - have made their way into the political module. All in all, the PRS asserts that both the uncontroversial methods and conclusions of science enjoy a privileged epistemic status

³ I am indebted to Gabriele Badano and Matteo Bonotti for drawing my attention about the distinction that could be made between *methods* and *conclusions* of science. This distinction will play an important role in my version of the PRS.

within the Rawlsian framework: while a citizen is prevented from drawing upon his or her own comprehensive doctrine, scientific reasons belong to the epistemic toolkit that a citizen can legitimately draw upon when attempting to articulate the substantive principles that rule the basic structure.

I shall argue that Rawls is right in thinking of scientific reasoning as a paradigmatic case of public reasoning. Indeed, the logic of science mirrors a fundamental aspiration of political liberalism, which can be sloganized as a quest for objectivity. While science constitutes an evidence-based epistemology that aims to produce objective knowledge about factual reality, political liberalism aims to construct an equally objective justification for the political order.⁴ Both forms of objectivity share core traits. On the one hand, Rawls states the importance of establishing “a public frame of thought sufficient for the concept of judgment to apply and for conclusions to be reached on the basis of reason and evidence after discussion and due reflection” (2005: 110). This is required “for all kinds of inquiry, whether moral, political, or scientific, or matters of common sense” (Rawls, 2005: 110). These are clearly different domains of human exploration, but Rawls believes that a structural pattern of ideal reasoning undergirds all of them, to the extent that these inquiries aim at publicly recognized conclusions. This pattern is expressed through constraints and requirements at the procedural level - i.e. respect for evidence - which makes the conclusions *objective* and therefore acceptable to all parties involved.⁵

On the other hand, Rawls distinguishes the objective point of view - which can be described as an impersonal and unbiased standpoint - from the point of view of a particular agent or group of agents at any particular time. Appeals to science are precisely predicated on its capacity to provide such an impersonal and unbiased standpoint to judge between competing factual claims. This is the source of its epistemic authority; Ideally, its procedures and conclusions are not tainted by sectarian normative commitments, community biases or personal interests.⁶ In turn, the political conception aims to a similar standpoint – “the point of view of certain appropriately defined reasonable and rational agents” (Rawls, 2005: 111) - to judge between normative propositions. Thus, in the same way that objectivity in science

⁴ As Rawls describes it, his constructivism will provide “an appropriate basis of objectivity for its limited political purposes” (2005: 110).

⁵ Objectivity, as Diana Taschetto has observed, is a value: “To label a thing objective means to ascribe some importance to it and to say that we approve of it” (2015: 154).

⁶ As the philosopher of science Keith Parsons has enunciated, “science has always made a radical claim, namely, that humans are capable, at least on occasion, of transcending sectarian bias and of acquiring objective knowledge” (2005: 160).

depends on the capacity to isolate and control predetermined singular allegiances, objectivity in political morality depends on the capacity to isolate and control asymmetries and contingencies between the parties to the social contract. Here, objectivity, publicity and fairness appear as natural allies. Science is therefore a paradigmatic case of public reason insofar as its epistemic processes are defined by a set of principles of reasoning and rules of evidence that are supposed to transcend sectarian agendas and cultural biases. In parallel, public reason is defined by a set of principles of reasoning and rules of evidence that are accessible to citizens from diverse backgrounds and comprehensive allegiances. Science aims for its conclusions to be recognized by all, in the same way that public reason aims to produce decisions that are justified to all.

This is, I believe, the context to understand Rawls' original expectation to recreate a "kind of moral geometry" (1999a: 105) to account for justice as fairness. The underlying intuition is that it might be possible to arrive to an objective moral order whose procedure is *as* rigorous *as* the scientific. Although Rawls acknowledged the limitations of the project, he seemed motivated by the conviction that there was an appropriate bias-reducing systematic method for political morality as it exists for sciences. In both realms, the question is what counts as a successful justification. In science, a claim is justified when it has achieved a certain level of explanatory proficiency from empirical evidence, logical correctness and predictive capacity. If these requirements are met, we are usually warranted to declare that we possess objective knowledge about certain phenomena. In a similar way, a political order is justified when its claims can be recognized as compelling from certain impersonal standards. In other words, objectivity has justificatory properties. Rawls knew that these properties are traditionally associated with science but he thought that they could be traced - and perhaps implemented - in other human endeavors. This appears to be a pivotal assumption for political liberalism: that it is possible to aspire in ethics and the political life to a standard of objectivity analogous to the one that we recognize in scientific inquiry.⁷

⁷Martha Nussbaum has also defended this connection. In both the domain of science and ethics, she argues, many of the participants would "make room for a significant notion of objectivity, defined in terms of the most adequate and intersubjectively confirmed use of mental faculties—or, in ethics, in terms of that which we can reasonably recommend to all" (Nussbaum, 2001: 885). She goes on to assert that "we do have available to us a quite robust conception of objectivity both in science and ethics, and we do not need to rely, in articulating this notion, on any problematic notion of the given, or unmediated access to reality" (Nussbaum, 2001: 886). In turn, Diana Taschetto has persuasively tracked Rawls's predilection for objectivity to W. V. O. Quine's influence. In her terms, "what [Rawls] does is simply to include Quine's notions of explication, confirmation and scientific inquiry in its methodological agenda to face ethical questions... The same requirements of

For all the above reasons, the formula “methods and conclusions of science” should be disaggregated. The conclusions of science are valid if the methods are correctly observed. If we think that the method is duly followed, there is little reason to condition the acceptance of the conclusion, even if some citizens have quarrels with it. Put differently, what matters is that the scientific procedure to arrive to certain conclusions is publicly justified in the sense that all citizens accept its underlying principles of reasoning and rules of evidence. To be sure: within public reason, Rawls refers to both knowledge and ways of reasoning - what I have called the *static* and the *dynamic* side of public reason. The conclusions of science represent the former whereas the methods of science represent the latter. The noncontroversial conclusions of science are straight plain truths in the Rawlsian nomenclature. But even if a scientific conclusion is currently resisted - if it does not amount to a plain truth in the sense that it is not now widely accepted- we should still attend to its methodological credentials. My claim is that it is science’s ability to generate trustworthy knowledge, and not the specific acceptance of a given theory, which determines its epistemic privilege within public justification. In the same way that liberal neutrality is not about equal outcomes, the liberal interpretation of science is neutral in a procedural way. As the conclusions of science are intended to adjudicate between competing hypotheses, it is expected that their impact might be felt differently. The bottom line is that in case of tension between an epistemically justified procedure and conclusions that are resisted by some groups, political liberalism should stand by the former criterion.

The argument so far is the following: the political conception of liberalism relies on a system of public reasoning to decide on its substantive principles. In turn, scientific reasoning provides a paradigmatic case of public reasoning, to the extent that it can be presented as objective and fair to different parties holding competing factual claims. Therefore, scientific reasoning mirrors a central element of political liberalism's justificatory project.

2. Strictly Internal Objections.

Objections of a different nature have been raised against the idea of science as public reason. In this next section, I will review three strictly internal objections. By this I mean objections

evidence and objectivity apply to both ethical and natural science” (Taschetto, 2015: 156,155). I will come back to this association in the final section of this Chapter.

raised by liberal political theorists who support the idea of public reason but believe that the Rawlsian formulation does not permit scientific arguments to be included in it without very specific qualifications.

2.1. The Scope Objection

In its classical formulation, the requirements of public reason are to be applied only to constitutional essentials and matters of basic justice. If this is the case, the uncontested methods and conclusions of science might well enjoy a privileged epistemic status in political liberalism but limited to these few crucial debates. Outside the narrow realm of Rawls' fundamentals, scientific reasons are thus as valid as any other reason, including pseudoscientific postulates, esoteric intuitions and personal opinions. An epistemic egalitarianism would reign for non-fundamental matters. This objection, thus, is not aimed against science as public reason *per se*, but against the invocation of science as public reason in most cases. This objection has been recognized as pressing by liberal political theorists working on climate change and it should be acknowledged as pressing for our case at hand: if the constraints of public reason are to be applied only to fundamental matters, and the guiding contents of compulsory schooling are not regarded as fundamental in this sense, then perhaps no public reason constraints should be applied in educational issues or curricular debates, whether they are held within legislature bodies, governmental departments or decentralized boards. In brief, it would be pointless to address the evolution vs. creationism educational debate using a PRS. Conversely, its resolution would have to be handled according to an unrestricted counting-heads criterion.

However, some liberal theorists have come to believe that there is little reason to restrict the scope of public reason in such a way. They point to the fact that Rawls himself was willing to expand the application of public reason constraints outside constitutional essentials and matters of basic justice. Rawls indeed admitted that his aim was “to consider first the strongest case where the political questions concern the most fundamental matters” because “if we should not honour the limits of public reason here, it would seem we need not honour them anywhere” (2005: 215). Nonetheless, he added, “should they hold here, we can then proceed to other cases. Still, I grant that it is usually desirable to settle political questions by invoking the values of public reason” (Rawls, 2005: 215).⁸

⁸ It appears that Rawls changed his mind later. In *Justice as Fairness: A Restatement*, he confesses to have been persuaded by Timothy Scanlon and Peter de Marneffe that there are good reasons to treat fundamental matters and other legislative or policy issues differently. In a footnote, he argues that “we strive for publicly based

Here I will follow Jonathan Quong⁹, Steven Lecce¹⁰, Catriona McKinnon¹¹, Lawrence Torcello¹², among others, in affirming an extended understanding of the idea of public reason. Their arguments touch on slightly different but related points. To summarize, they suggest that all public debates with a coercive impact should be instilled with the spirit of civility that political liberalism attempts to promote in pluralistic societies. In other words, if we believe in the virtues of the principle of legitimacy in the first place, there is no overriding reason to follow it in some matters and not in others which have a very similar effect in the lives of citizens.

By broadening the scope of public reason in the above sense, many topical controversies that include a relevant dimension of factual disagreement should thus take the methods and conclusions of science as especially weighty inputs, even if these controversies are not strictly constitutional in character. Hence, if it is implausible to classify climate change legislation

justifications for questions regarding the constitutional essentials and basic questions of distributive justice but not in general for all questions to be settled by the legislature within a constitutional framework. We should distinguish, then, between these two cases, the first attainable (we hope) and desirable, the second neither attainable nor desirable” (Rawls, 2001: 91). Unfortunately, instead of grounding such distinction, Rawls only indicates that “a satisfactory account of public reason would show how these [non-fundamental] questions differ from fundamental questions, and why the restrictions imposed by public reason do not apply to them, or if they do, at least not in the same way or so stringently” (2001: 91).

⁹In Quong’s version of political liberalism, public reason should be applicable all the way down, which would include decisions over the mandatory school curriculum. As Quong puts it, “the idea of public reason should always regulate our behavior when exercising political power [and] this results in a strict form of antiperfectionism” (2011: 43).

¹⁰Lecce argues that the Rawlsian restriction is untenable “because the features of politics that underlie the democratic argument for contractualism -the coercive nature of political power and pluralism- do not track the distinction between basic (constitutional) and non-basic political issues, and so that distinction is groundless” (2008: 232). Then, the constraints that public reason imposes - neutrality constraints, in Lecce’s terms - “must exclude sectarian values whenever citizen’s interactions with one another are mediated through state agencies, at every level, and not only when constitutional questions are at stake” (2008: 233).

¹¹In articulating a Rawlsian response to the challenges of climate change, Mckinnon argues that this kind of debate should be also covered by the spirit of public reason even if they do not seem to pertain to the fundamentals of justice. According to Mckinnon, “the form of political justification that most of us encounter directly is legislative debate about non-fundamental matters, very few of us have contact with constitutional conventions or arguments about amendments, and even fewer participate in rarefied discussions about the justification of fundamental principles of justice in political philosophy. Adopting a commitment to public reasoning about legislative matters could deliver to people a tangible experience of the values of equality and reciprocity embedded in the ideal of democratic political justification to which politics in higher tiers always (ought to) answer” (2012: 20).

¹²Drawing a parallel between an ethics of inquiry and an ethics of public discourse, Torcello argues that the Rawlsian idea of public reason “must be extended into domains not initially insisted upon by Rawls. In particular, the need for an ethics of public discourse informed by, and akin to, an ethics of inquiry provides the proper incentive for an extension of public reason to all matters of public discourse relevant to science and public policy... such an extension demands that arguments inconsistent with scientific consensus be avoided in public debates relevant to public policy decisions” (2011: 205-206).

and curricular debates as constitutional essentials, they should nevertheless be addressed through public reason constraints. In the case of compulsory public schooling, for instance, subjects such as sexual reproduction and evolutionary biology will incorporate scientific perspectives in their capacity as public reasons. Conversely, positions grounded on comprehensive views about these issues will not dominate their treatment. Henceforth, here I shall consider that the core content of the mandatory curriculum should abide by the requirements of public reason.¹³

If the above reply is not convincing - because the reader wants to insist that there are good reasons to limit the requirements of public reason to constitutional essentials and matters of basic justice - then a subsidiary argument is available. We can argue that in many of these seemingly non-constitutional debates there is indeed a basic justice concern that claims to be acknowledged. In the case of climate change, it is about our fundamental duty to the next generations. In the case of curricular debates, it is about the educational system as a central distributive mechanism for liberal egalitarianism. I will not delve into this subsidiary strategy here, but it might be important to present it.

2.2. The Associational-Reason Objection

According to this objection, scientific reasons are reasons issued by scientists. As such, it is the reason of a particular association of individuals. It is therefore a nonpublic reason, belonging to the background culture. In Rawls' own terms, "among the nonpublic reasons are those of associations of all kinds: churches and universities, scientific societies and professional groups" (2005: 200). From here, Catriona McKinnon has argued that even though debates about climate change legislation *ought to* be covered by the rules of public reason, it might be just impossible to reconcile this claim with the Rawlsian formulation.¹⁴

¹³ Steven Lecce offers an educational example to illustrate this point: a group of ultraconservative Roman Catholics - whose religious convictions condemn both premarital sex and homosexuality - manage to gain majority control of a local school board. The board then proceeds to expel students suspected of these 'sinful' behaviours. Here, as indicates Lecce, political power is deployed non-neutrally (meaning without public justification) "but because it occurs at a local level, it escapes the neutrality constraint when the latter is confined to the basic structure" (2008: 233), unless, Lecce suggests, "the exact content of local public school curricula is something required by justice" (2008: 233).

¹⁴ I quote McKinnon's position at length: "The epistemic abstinence built into the ideal of democratic justification excludes from political debate scientific (and other experts) judgments which are essential to the formulation of such policy because these judgments are not a product of 'the general beliefs and forms of reasoning found in common sense', to which debate in public reason must be restricted. Because scientific (and other) expert opinion does not consist of 'plain truths'... policy makers using Rawls' public reason *prima facie* would not get very far. There is, it seems, an unavoidable mismatch between the essentially nonpublic reasons of communities of experts which must inform debate about climate change policy, and the essentially public

Consequently, scientists could not point to their methods and conclusions as essential constituents of a public epistemology suitable for political justification. Their reasons would be as sectarian as the reasons wielded by religious congregations. Theoretical physicists, medical researchers and biochemists are experts in their respective fields in the same way as priests show theological expertise, the argument goes. But in none of these cases can experts claim that theirs are truly public reasons. So, this objection is not targeting scientific reasons alone, but any reason that is promoted as public while coming from a specific expertise that laypeople might find difficult to understand. As the reasons of experts are inaccessible to citizens generally, they seem to be paradigmatically nonpublic.¹⁵

It is important to note that McKinnon is not arguing that scientific and religious reasons are on a par when it comes to public justification. She thinks that in cases such as climate change legislation it would be plainly absurd to ignore scientific input: there is no way, in these complex cases, to avoid the conclusions of experts, although they are nonpublic and often inaccessible.¹⁶ Instead, McKinnon's proposal is "extending the ideal of public reason to policy making that makes ineliminable reference to the nonpublic reasoning of communities of experts" (2012: 22). In her account, this extension would not cover religious reasons. Hence, that the scientific conclusions regarding climate change cannot be presented as plain truths in the Rawlsian sense should only mean "that the ideal of public reason must be made more permissible with respect to the considerations it is legitimate to invoke in political justification directed towards legislative questions" (McKinnon, 2012: 23). Further, McKinnon goes on to set out some requirements to make this extension workable.¹⁷

reason in which, I have claimed, such debate must be coached" (2012: 21). In a similar way, Karin Jøneh-Clausen and Klemens Kappel have recently concluded that the privileged epistemic status that Rawls assigns to science cannot be properly justified because "it seems difficult to grant that widely accepted scientific methods and conclusions are not based on reasoning that is tremendously elaborate or complex" (2015: 126), which surpasses the competences of the general public.

¹⁵ In the same vein, David Estlund has argued that where justifications should be presented in terms that all reasonable views can accept, "it is far from certain that there would be anyone whose status as an expert in the factual and moral domain of political decision could pass muster" (2012: 271). Accordingly, as scientists are supposed to be experts in the factual domain, Estlund appears to think that their reasons carry no special weight as public reasons.

¹⁶ As McKinnon puts it, "ignoring the non-public reasoning of such scientific associations would leave policy makers completely in the dark with respect to framing legislation to tackle climate change. It cannot be that, just as the pronouncements of priests should be kept out of public debate about gay marriage, so the (often) controversial research of atmospheric scientists ought to remain firmly within the limits of university departments of meteorology" (2012: 22).

¹⁷ She suggests that this readjusted notion of public reason should permit "the introduction of considerations that are not plain truths and reasons that are not a product of common sense, and/or the methods and conclusions of science when not controversial. Public reason should permit the introduction of complex,

McKinnon's proposal might be useful for our purposes. Although the intricacies and details of biological evolution escape from common knowledge, it could be argued that debates over the content of the science curriculum should be solved in the same manner: it would be absurd to decide over such content without heeding the counsel of the experts in that field, although such reasons should be regarded as non-public. Both of McKinnon's criteria would be met: on the one hand, scientific evidence is indispensable to decide natural science's curriculum; on the other, the scientific community has a good sense of which internal disagreements over evolution are reasonable and which are not. As creationism is a fringe expression in natural sciences, it is to be rejected in the same way as climate change denialism is marginal in its respective field.

Again, I argue that this strategy should only be subsidiary. To my mind, the problem with McKinnon's account is that it conflates the reason of scientists as a community of experts with the epistemic properties of scientific reasoning. The latter stands for a (fairly idealized) impartial cognitive procedure to acquire objective knowledge about factual reality. It is thus considered public to the extent that it provides an impersonal standpoint to judge evidential claims. In other words, reasons are public or nonpublic not in consideration of the holders of such reasons, but related to the epistemic source of the reasons which are held.

This view is consistent with the argument that we should focus on the procedural virtues of the method rather than on the degree of acceptability of the conclusions. The content of a scientific theory can indeed be inaccessible to people with no scientific training. However, what is politically crucial is that such content is the outcome of a procedure in which epistemic fairness is accessible to all citizens. Accordingly, political liberalism is not delegating the resolution of factual disagreements to the scientific community as such. Scientists are not adjudicating political debates in their capacity as experts, as some political theorists might fear. Instead, political liberalism is recognizing the scientific way of reasoning as a public framework of thought. Thus, we accept the conclusions of science because we have strong reasons to believe in the justice of the method, and not because these conclusions emerge from the work of a specific association.

specialist, often inaccessible, nearly always controversial, and thoroughly nonpublicly reasoned expert advice" (McKinnon, 2012: 23) when two qualifications are met: on the one hand, when empirical and scientific evidence is indispensable to the case, which she calls the "Permissibility of Expertise" criteria; on the other hand, when experts themselves have established the limits of reasonable disagreement in their area of expertise, which she calls the "Autonomy of Experts" criteria.

In McKinnon's logic, reasons wielded by the Royal Society, an association for the advancement of science in the UK, would not be different in character from reasons held by the Anglican Communion. This makes sense if we take both reasons as associational. We expect the former to apply a series of methodological constraints, aimed at transcending sectarian biases, to produce their reasons, an expectation that we do not extend to an association of churches. In this sense, we hope that scientific activity will be guided by rules of evidence, judgment and inference that all parties can reasonably recognize as fair and aimed at producing objective knowledge. Conversely, the Anglican Communion can perform its theological work without the same epistemic constraints. The nub of the issue is that it could be the case that a certain scientific association fails its epistemic duties, so to speak, and a given religious association abides by these rules of evidence, judgment and inference. In that hypothetical scenario, the reasons of the former will be non-public whereas the reasons of the latter will qualify as public in the sense that they will be the result of a fair epistemic procedure. Hence, the associational affiliation is secondary. What should matter is the way in which they are reasoning. Thus, while the reasons of scientific associations will not qualify as public *qua* associational, the scientific epistemology remains public *qua* epistemology.¹⁸

A further point should be added. Arguably, McKinnon is right in arguing that scientific reasons - at least in the case of climate change but surely also in other fields - hardly constitutes "plain truths now widely accepted". However, we should not forget that Rawls refers to plain truths now widely accepted or "available to citizens generally". Then, the problem is not exhausted by noticing that the conclusions of, say, climate change or evolutionary biology, are not widely accepted as we speak, but also whether they are available by reasonable means to laypeople. In this sense, Elizabeth Anderson has put a proposal forward. Like McKinnon, Anderson acknowledges that responsible policy making relies on complex research and that such research is difficult to assess for citizens without scientific training. Nonetheless, she believes that "laypersons have the second-order capacity to judge trustworthiness and consensus, and access to the information needed to make such judgments" (Anderson, 2011: 145). In other words, ordinary citizens can appraise the strength of scientific conclusions and the fairness of scientific methods because such

¹⁸This is consistent with our view that supernatural hypotheses can, in principle, account for factual phenomena better than naturalistic ones, regardless of the religious or nonreligious affiliation of their defenders.

knowledge is generally available. Anderson's case in point is precisely climate change, but a similar argument can be deployed for evolutionary biology.¹⁹

To restate my argument: a way of reasoning will be public if its epistemic capacities to produce objective knowledge are recognized by all rational individuals in a pluralistic society. Even if some citizens are not willing to concede a specific scientific conclusion, Anderson's proposal is helpful as a reminder that they can always check the justice of the method.

2.3. The Controversiality Objection

To be considered public reasons, the methods and conclusions of science should be, in Rawls' formulation, noncontroversial. Unfortunately, he does not elaborate on the criterion. Hence, there is room to argue that insofar as a theory remains disputed in a pluralistic society, such a theory does not belong to the kind of public reasons we can legitimately appeal to in liberal democracies. This was noticed by William Galston, precisely regarding the case of Darwinian evolution.²⁰ Thus, the controversiality objection states that intra-scientific consensus is not enough for a reason to be considered public in the Rawlsian sense. It seems to demand an extra-scientific consensus, which is the consensus of the wider population over a certain scientific issue. The problem with the intra-scientific consensus view, in the eyes of this objection, is that the methods and conclusions of science that claim to be public reasons might turn out to be at odds with widely accepted beliefs outside the scientific community, thus defeating the spirit of the liberal project of public justification. However, if noncontroversial means full extra-scientific consensus, then little science would deserve to

¹⁹ Anderson claims that citizens have three ways to assess the reliability of sources and the degree of scientific consensus in a certain subject. First, they can recognize expertise through objective academic and professional indicators. Second, they can recognize intellectual honesty, meaning no hidden agendas. Third, they can recognize how responsive to counter-evidence a scientific postulate is. In Anderson's view these three criteria can be met in the case of anthropogenic climate change: "the information needed for the public to assess the trustworthiness of those who make claims about the theory of global warming, and the existence of a consensus of the trustworthy on this subject, is readily accessible on the Web and open to lay assessments by means of the criteria listed above" (2011: 150). This resonates with my claim that what is politically crucial is that scientific reasons are the outcome of a procedure which epistemic fairness is accessible to all citizens.

²⁰ I quote Galston at length: "As an element of a conception of 'public reason' -the public discourse suitable for a liberal democratic regime- Rawls includes 'accepting the methods and conclusions of science when not controversial.' The question is, controversial to whom? For some religious groups, the theory of evolution remains contestable. For others, including established organizations such as the Christian Scientists, 'spiritual healing' is equal (at least) to science-based modern medicine. If 'not controversial' means 'not challenged by any religion', then virtually nothing of contemporary science can be included in public reason. But if we construe 'not controversial' to exclude the claims of dissenting religious groups, then... we fail to take deep diversity seriously" (Galston, 1995: 519-520).

be public reason. Flat-Earthers could question the roundness of the planet and by this simple act of disbelief strip a well-established scientific fact from its public reason robes.

Recently, Karin Jønch-Clausen and Klemens Kappel have argued that the best way to interpret Rawls' non-controversiality requirement cannot be along the lines of the intra-scientific criterion.²¹ However, at the same time, they share the concern that not much science would be left if we were to take a full extra-scientific criterion of acceptance.²² Hence, they go on to propose a mixed formula in which the methods and conclusions of science will qualify as public reason if they are widely accepted in both senses. This interpretation, as they put it, "allows for *some* minority dispute on the scientific communities as well as in the general public" (Jønch-Clausen and Kappel, 2015: 124). As an example, they cite the research topic of gender equality: both the wider public and the established scientific communities agree that there is no significant difference in intelligence between sexes, even though some laypersons and even scientists might want to dispute this statement. This seems like a thoughtful restatement of the controversiality objection.²³

Here, however, I shall defend the intra-scientific interpretation. This work maintains that when scientific postulates are noncontroversial - in the sense of not being relevantly disputed by the experts in the respective field - they should be regarded as part of public reason regardless of their levels of extra-scientific acceptance.

The first line of reply points to the fact that Rawls' own position seems to be closer to the intra-scientific interpretation. Describing the kind of knowledge that the parties retain under the veil of ignorance, Rawls alludes to "the information provided by natural science" (1999b: 236), without further specification as to how widely accepted this information should be. Moreover, as "the reasoning leading up to the initial agreement is to be accessible to public understanding... we must rely upon current knowledge as recognized by common sense and

²¹ In their terms, "if non-controversial is interpreted to refer only to an intra-scientific consensus, then beliefs or reasons supported by large parts of the general public could be excluded from public reason...[but] basic laws or public policies based on intra-scientific consensus on policy-relevant factual questions would seem suspiciously non-public (in a certain sense) in cases where the general public rejects the intra-scientific consensus" (Jønch-Clausen and Kappel 2015: 123).

²² Following Galston's remarks, Jønch-Clausen and Kappel argue that "it is hard to come up with a range of law and policy-relevant scientific findings and methods that would not be contested by *some*, either in the public or in the scientific communities" (2015: 123).

²³ It might be relevant to add that Jønch-Clausen and Kappel also think that science *ought to* be epistemically privileged in public debates, but their narrow aim is only to show the difficulties involved in justifying such privilege. "Providing a justification of the privileged role of science in public reason", they conclude, "must away future work" (Jønch-Clausen and Kappel, 2015: 133). This is exactly what I intend to do here.

the existing scientific consensus” (Rawls, 1999a: 480). The last expression does not leave much room for doubt. Although expressed for the purposes of the OPS, the same standard should apply for the PRS. Considering that Darwinian evolution represents a robust intra-scientific consensus in biology and elsewhere, Rawls would have understood the fact of Darwinian evolution - and anthropogenic climate change, for that matter - as part of public reason.²⁴

The second line of reply is mainly methodological. Any view that attaches the greatest importance to the effective existence of an extra-scientific consensus runs the risk of being too context-sensitive. Considering public acceptance of Darwinian evolution in the US and Canada, as more than *some* in the US reject Darwinian evolution, this scientific conclusion would not qualify as public in that country. However, the same scientific conclusion will be public reason in Canada. These two liberal democracies share a large border. It is therefore odd that the same reason has its public character changed just by crossing an actual border. The position that I am defending is that science constitutes a public epistemology because it is purposefully arranged to transcend sectarian biases, which not only includes religious biases but also national frontiers. The philosophical point is that instead of measuring the actual reception of a scientific conclusion, we should assess whether scientific reasoning as a mode of inquiry expresses universal epistemic features. This might also be read as an endorsement of a less context-sensitive way of doing political theory. I have no quarrel with that.

The third and most fundamental reply tracks the distinction between methods and conclusions. As mentioned, the methods of science aim to embody a fair epistemic procedure to attain objective knowledge. Scientific conclusions, in turn, tend to be accepted or rejected according to people’s prior comprehensive commitments. Thus, an extra-scientific interpretation of the non-controversiality requirement means to allow every citizen’s biases to account for factual reality. These biases are entirely normal. We usually refer to them as confirmation biases. In the Rawlsian framework, we might be tempted to think that confirmation biases refer to the first of the burdens of judgment, namely, the idea that the scientific evidence on certain subjects is complex and difficult to assess. But that is not the

²⁴ This is consistent with Samuel Freeman’s understanding of the OPS. Under the veil of ignorance, Freeman argues, the kind of general facts that the parties are privy to include “relatively uncontroversial laws and generalizations derivable from economics, psychology, political science, and biology and other natural sciences” (2016). Freeman goes on to mention “biological evolution” as part of the informational background that is not suspended in the original position.

case. If any of the burdens of judgment described by Rawls, the problem is that “the way we assess evidence... is shaped by our total experience... [and] citizens’ total experiences are disparate enough for their judgments to diverge, at least to some degree, on many if not most cases of any significant complexity” (2005: 56-57). Dan Kahan and Donald Braman have explained this as the phenomenon of ‘cultural cognition’: we tend to believe what suits our prior comprehensive assumptions.²⁵ A good deal of recent literature in cognitive science has shed more light on the issue; it seems that our epistemic capacities did not evolve to distinguish true from false claims on evidential grounds, but to interact socially through the avoidance of cognitive-dissonances.²⁶ This strategy of avoidance “will steer individuals to resist empirical data that either threatens practices they revere or bolsters ones they despise, particularly when accepting such data would force them to disagree with individuals they respect” (Kahan and Braman, 2006: 163). If this is correct, then it makes perfect sense to restrict the non-controversiality requirement to the methods precisely designed to mitigate confirmation biases and isolate comprehensive allegiances, as well as to the conclusions that are the result of such a method. Without this restriction, citizens can bring their own sectarian biases to the debate, which is at odds with the spirit of public reason. Therefore, the grounds to decide for an intra-scientific interpretation of the non-controversiality requirement lie in the cross-cultural recognition of the fairness of a bias-correction procedure.

Among political philosophers, Lawrence Torcello has adopted the view that while science seems to be “geared towards eliminating those cognitive asymmetries that may result from confirmation bias... the denial of scientific consensus by non-experts is not tempered by any process to mitigate such influence” (2011: 204). As no mitigation process is readily available in the extra-scientific sphere, Torcello argues that “it is important that we take care to limit our public arguments to those consistent with scientific consensus when arguing in the public sphere” (2011: 204). Otherwise, a variety of comprehensive biases would be smuggled into the business of political justification, which is justly about tempering comprehensive

²⁵ Kahan and Braman describe it as follows: “Essentially, cultural commitments are *prior* to factual beliefs on highly charged political issues. Culture is prior to facts, moreover, not just in the evaluative sense that citizens might care more about how gun control, the death penalty, environmental regulation and the like cohere with their cultural values than they care about the consequences of those policies. Rather, culture is prior to facts in the cognitive sense that what citizens believe about the empirical consequences of those policies *derives* from their cultural worldviews. Based on a variety of overlapping psychological mechanisms, individuals accept or reject empirical claims about the consequences of controversial policies based on their vision of a good society” (2006: 148).

²⁶ Among these, see H. Mercier and D. Sperber’s *The Enigma of Reason* (2015), Jack & Sara Gorman’s *Denying to the Grave: Why We Ignore the Facts That Will Save Us* (2016), and S. Sloman and P. Fernbach’s *The Knowledge Illusion: Why We Never Think Alone* (2017).

allegiances and developing a kind of civic ethics. Torcello goes on to assert that non-experts who dispute the scientific consensus in the public forum are guilty of harmful epistemic irresponsibility.²⁷ For the purposes of this section, however, it suffices to outline that opening the non-controversiality requirement to society at large means to welcome everybody's blinders to interpret factual reality in the political domain.

It should be recalled that Jønch-Clausen and Kappel do not argue against the intra-scientific consensus interpretation but in favour of extending the non-controversiality requirement to a wide extra-scientific consensus. This way, both are presented as necessary but neither as a sufficient condition alone. Then, it might be said that Torcello's concerns are addressed; a reason that lacks the relevant intra-scientific support will never be regarded as public in the Rawlsian sense. However, the problem remains in cases in which more than *some* laypeople reject the scientific consensus. Neither Darwinian evolution nor climate change science would qualify as public reasons if we were to follow Jønch-Clausen and Kappel's proposed criterion. Here, we have offered an alternative resolution framework: for a scientific reason to be considered as public, what should be widely uncontroversial is the method and not necessarily the conclusion. Once the methods are broadly accepted for their abstract capacity to produce objective knowledge, their specific conclusions will be always legitimate as the results of a valid epistemic procedure. The actual extra-scientific acceptance of the conclusions then becomes superfluous. William Galston is surely correct in pointing that certain scientific theories will be always resisted by some religious denominations and perhaps other nonreligious stakeholders. But that fact does not define the normative case. For the purposes of political justification, the crucial question is whether they endorse the method in virtue of its epistemic fairness. I argue that political liberalism should consider scientific reasoning as public because of its capacity to produce objective and trustworthy knowledge, which cannot be conditioned to the actual acceptance of a particular outcome, since actual acceptance usually depends on our prior comprehensive commitments. Paraphrasing Rawls, what matters is whether we are endorsing ways of reasoning and rules of evidence *for reaching* true beliefs in public discussion, regardless of whether the reached belief is uncomfortable for some (1999b: 327).

²⁷ In Torcello's view, "the moral importance of getting facts right on matters with extreme social and global ramifications (such as climate change) cannot be overstated... the obstinate public promotion of beliefs contrary to establish scientific consensus by non-experts, and especially in the context of political advocacy, is morally condemnable" (2011: 202).

To sum up, the substantive point defended here is twofold. On the one hand, when it brings about scientific conclusions, the non-controversiality requirement of public reason should be limited to the intra-scientific consensus. On the other hand, there should be a wide cross-cultural consensus over the fairness and suitability of the scientific method for adjudicating factual disagreements.

3. Truth, Scientism and Perfectionism.

The following objections remain internal to the extent that they charge political liberalism with certain inconsistencies, but they are articulated in a way that surpasses Rawls' strict formulation of the ideal of public reason. These objections are related in the sense that they all dispute that scientific reason could achieve its purported 'purely political' goals in the scheme of liberal public justification.

3.1. The Truth Objection

In a much-discussed passage, Rawls argues that political liberalism does "without the concept of truth" (2005: 94). Indeed, the whole project of devising a freestanding conception of justice relies on its independence from comprehensive truth-claims, which will be varied in pluralistic environments. In the context of public reason, this has been interpreted as a constraint on the kind of arguments that citizens should offer in the public sphere: they should avoid appealing to what they see as the whole truth when addressing other citizens if they are to fulfill their duty of civility. However, this might appear contradictory with Rawls' own reference for public reasons as "plain truths now widely accepted, or available, to citizens generally". Recall that the noncontroversial conclusions of science were indeed presented as plain truths. The question is whether citizens in their public capacity can legitimately appeal to scientific truths while political liberalism is supposed to prescind of truth-claims.²⁸

My reply is that the truth objection misses its mark. The first reason is that the political conception is intended to avoid truth-claims of a comprehensive nature. Rawls usually refers to moral truths as indicative of such comprehensive character, because moral truth-claims lie

²⁸ Not all Rawlsian theorists agree that political liberalism should do without the concept of truth as such. For a critical assessment of Rawls' statement, see Cohen (2009) and Estlund (2012).

at the core of different comprehensive doctrines. Scientific truths are, by themselves, non-comprehensive. They are just pointing out facts, not values. They might trigger philosophical reflections of a more comprehensive nature - as in the case of Darwinian evolution - but the scientific fact can be analytically distinguished from its substantive outgrowth. Thus, scientific truths lack the inherent normativity that make moral truth-claims problematic for public justification in pluralistic contexts.

The second reason is because scientific truths were arrived at through a procedure that was checked as epistemically fair to all parties. In other words, we call them truths only to the extent that they are methodologically warranted. The premise, of course, is that in the domain of factual reality we have already found a mode of inquiry able to uncover these truths, a mode of inquiry that is rather elusive in the domain of value and meaning. Political liberalism thus assumes that the conflict aroused by moral disagreement is different from factual disagreement, as in the latter we have an impersonal procedure to produce objective knowledge. As we mentioned, this quest for objectivity is not only allowed but encouraged in political liberalism.

The third reason is because the truth-claims that public reason liberalism hopes to avoid pertain to an independent order of values, outside the purely political. The truth of Christianity, for instance, is said to be transcendently constituted beyond the political. In turn, political liberalism is the explicit result of a constructivist effort. This means that there is no independent order of values to decide on the truth of moral judgments. Political constructivism works out its own standards of justification from the inside. This is where scientific conclusions as “plain truths” play their part. They are internal gears of the justificatory structure, even if they are not themselves constructed in the same way. Rawls is explicit that “a constructivist political conception is not at odds with our commonsense ideas of truth and matters of fact” (2005: 122). The latter are hence available tools for building the institutional framework that supports a purely political conception of justice.

The fourth reason is because the kind of truth that political liberalism does without is supposed to be an immutable one. For example, the ultimate truth of Islamic teachings or Kantian philosophy does not change by the effect of human discoveries. They might be reinterpreted, but their truths are intended to transcend those contingencies. Instead, the “plain truths” associated with scientific conclusions are always provisional. It would be nonsense to cling to them as unchallengeable, as most religious and philosophical worldviews

do. A current scientific truth is a “plain truth”, but it ceases to be a “plain truth” once this scientific truth is called into (relevant) question.

All in all, whilst prevented to appeal to moral truths - as they are traditionally held and pursued by comprehensive doctrines - citizens in public deliberation are not equally prevented to appeal to “plain truths” in the sense of objective facts about the world, such as noncontroversial scientific laws and theories. Hence, scientific assertions, when not relevantly disputed, are emancipated from the constraints that metaphysical beliefs and ethical worldviews must endure under the rules of public reason. This has obvious implications for our case study. In the same way that the Big Bang theory is a scientific truth in astrophysics, evolutionary theory is a scientific truth in biology. Thus, evolutionary theory merits being regarded as a “plain truth” in the Rawlsian nomenclature. Therefore, appealing to the truth of Darwinian evolution is entirely allowed under the rules of public reason. To be sure, political liberalism cannot defend its truth in any straightforwardly metaphysical, ontological, moral or ultimate-meaning sense. That would betray the spirit of public reason. It can only state that Darwinism is the conclusion (knowledge) arrived at through a method (ways of reasoning) that is epistemically preferred for its capacity to ground public justification.²⁹

3.2. The Scientism Objection

It might be argued that the place that scientific reasoning enjoys within public reason suggests a liberal commitment with an epistemic doctrine with comprehensive ambitions. This doctrine goes by the name of Scientism. In its classical formulation, Scientism stands for the belief in the universal applicability of scientific methods and codes to all human affairs, whether material or immaterial, usually to the exclusion of other viewpoints.³⁰ In other words, Scientism is not satisfied with arbitrating factual disagreements, but it aims to apply its epistemological model to determine metaphysical and moral answers too. This seems to be the case, the objection goes, if scientific reasons are immunized from democratic scrutiny and declared to be (alone) suitable to ground political justification. Arguably, if political

²⁹ This view seems to be consistent with Samuel Freeman’s thoughts on the issue. Freeman has argued that “even if the doctrine of intelligent design were true, it would be unreasonable to expect everyone else to endorse it; it could not serve as a source of public reason, for there is no empirical evidence for it. It does not fit with the ways of reasoning and kinds of evidence that are part of public reason” (2007: 228).

³⁰ For a typical expression of Scientism of this sort, see references to E.O. Wilson’s ideas in Chapter II.

liberalism is indeed embracing Scientism, it ceases to be impartial among comprehensive doctrines as it supposes to be.³¹

I shall counter this objection from three perspectives. First, it is important to recall that a reason being public does not entail that such a reason will automatically define the content of substantive justice. In the Rawlsian version, public reason is a condition of admissibility to political debate on fundamental issues. But more than one reason can be public in the same discussion. If that is the case, scientific reasons are not necessarily overriding. They must be weighed against other public reasons. As Rawls puts it, “the idea of public reason has to do with how questions should be decided, but it doesn’t tell you what are the good reasons or correct decisions” (1999b: 619).³²

Take the case of climate change. Scientists have made their case forcefully. They will show its anthropogenic character, its likely effects on coastal cities and possible mitigation measures at a global level. But these arguments by themselves lack normativity. Public officials are bound to comply with the researcher’s recommendations. Other (public) reasons will join in to configure a political course of action. The truth of Darwinism, for instance, says little about whether we should genetically enhance our anatomies to gain immortality.³³ Decision-making is a subsequent task, surely affected by other democratic and ethical considerations. In other words, scientific discoveries are specially privileged inputs to the political conversation in the sense that they are suitable to ensure public justification - in a way that comprehensive doctrines cannot - but the outputs might incorporate other public (a-scientific) reasons. Thus, the objection of Scientism is defeated. Of course, when the task

³¹ Asked whether the findings of science count as a comprehensive doctrine or public reasons in the Rawlsian scheme, the philosopher Burton Dreben replied that “it is part of public reason to use anything that is normally accepted in science. That is common sense. Scientism, however, is a comprehensive doctrine. It might be a secular comprehensive doctrine, but it is still a comprehensive doctrine” (2003: 345).

³² Commenting on Michael Walzer’s opposition to assisted-suicide, Rawls argued that Walzer’s was an argument within public reason. “I’m not sure it’s a good argument”, Rawls added, “but that’s another question. Public reason arguments can be good or bad just like other argument. There are many arguments within public reason, and that’s the thing to emphasize... What’s important is that people give the kinds of reasons that can be understood and appraised apart from their particular comprehensive doctrine. So the idea of public reason isn’t about the right answers to all these questions, but about the kinds of reasons that they ought to be answered by” (1999b: 618-619).

³³ Biological death is both a scientific fact and an inexhaustible source of existential meanings. Scientific arguments might tell us what to do to delay death as much as possible. But even if we agree on the factual side of the challenge, ethical questions are still a matter of (reasonable) disagreement. As Harari believes, science may eventually uncover the secrets of eternal youth. But then, “the real battle will shift from the laboratories to the parliaments, courthouses and streets. Once the scientific efforts are crowned with success, they will trigger bitter political conflicts” (Harari, 2016: 29). Thus, understanding science as public reason does not preclude political debate. It could be just the beginning.

at hand is strictly about adjudicating between competing factual claims - Is climate change anthropogenic? Are vaccines safe for our children? Is evolution by means of natural selection the best theory to account for biodiversity? – we can reasonably expect that the inputs of science are not equal to other public reasons but especially weighty. In those cases, scientific reasons should play an important role in shaping the outcome. However, this is not always the case.³⁴

Secondly, political liberalism could not enthrone science as a comprehensive doctrine since its own ends are much more limited. Public reason aims to provide citizens with a common discourse when it comes to deciding political matters, but it is not intended to constrain the myriad of discourses that take place in the background culture. Political liberalism singles out scientific reasoning to perform certain adjudicatory tasks within its modular conception, but it says nothing about the epistemic tools that individuals and associations can use outside it. The PRS works as a constraint on state action and justification. It is not a duty imposed over citizens' everyday lives. In Rawls's terms, political liberalism is legitimated to take "reasonable measures to strengthen the forms of thought and feeling that sustain fair social cooperation between citizens regarded as free and equal" but "this is very different from the state's advancing a particular comprehensive doctrine in its own name" (2005: 195). Scientific reason is therefore regarded as public for that purely political end. Thence this Chapter's pun: the scientific is indeed political in a very strict Rawlsian sense. Scientific reasoning has certainly other uses in social life, but these are not the kind of political uses that we are interested here.

Third, it might be the case that scientific reasoning plays the same structural regulative role for Scientism that autonomy plays for Kantianism or individuality for Millianism, but this is not the case of scientific reasoning *qua* public reason. Of course, any broad notion of comprehensive doctrine will include some epistemological ideas about the appropriate ways to acquire an understanding of the world. But this does not make any epistemic stand comprehensive. The expectation of political liberalism is that scientific reasoning could relate to different but reasonable comprehensive doctrines in a pluralistic society, as a way of an

³⁴ Philip Kitcher (2001) has identified some areas of scientific research which are potentially disturbing and may even further social injustice, such as investigations about the natural capacities of members of traditionally disadvantaged groups. His normative advice is to stop such research, even if science gets it right. I am not sure whether Kitcher's recommendation should be followed (for a critique, see Aikin and Harbour, 2010). The point that I want to stress is that some debates include scientific reason as public reasons but ultimately, based on other considerations such as those outlined by Kitcher, the parties to these debates decide to downplay their role in shaping the political outcome.

overlapping consensus. Scientific reasoning would be therefore epistemically freestanding. The challenge is thus to show that no reasonable worldview sincerely reject the scientific epistemic baseline to attain objective knowledge about the factual world. I will turn to this by the end of the Chapter.

3.3. The Perfectionist Objection.

The last internal objection to the notion of non-controversial science as public reason begins by noting that public reason, as the paradigmatic justificatory device of political liberalism, is supposed to be neutral in the relevant sense. In other words, that the arguments offered within the political module should appeal to non-comprehensive reasons.³⁵ If the exercise of state power cannot be neutrally justified, liberal political theorists speculate about a perfectionist intention, which means that political resources are being enlisted to promote a particular conception of the good. Some of these philosophers believe that perfectionism is morally acceptable within certain bounds while others think this is never the case. This is not the place to review that debate. Let me just state the objection that concerns us here: the promotion of scientific knowledge should be regarded as a perfectionist endeavour, imbued as it is by a substantive notion of what counts as a valuable life. If that is the case, scientific reasoning could not count as neutral and therefore it should not deserve a place within public reason.

Given our case-study, I will address this objection from a curricular debate perspective. Here, it seems that liberals of the neutralist kind face a dilemma. As any compulsory curriculum implies coercion, these will be justifiable only to the extent they pursue purely political (neutral) ends. Thus, in order to avoid the charge of perfectionism, public education should therefore confine its mandatory contents to the minimalistic goal of developing *political* reasonableness. In the Rawlsian framework, reasonableness is a political requirement that is basically exhausted with the acceptance of the burdens of judgment and the reciprocal recognition of fellow citizens as morally equal in a fair system of social cooperation. This requirement says little about how epistemically warranted other non-political beliefs should be. After all, Rawls introduced the idea of reasonableness as a basic criterion to avoid excessively intellectualist requirements for political life in liberal democracies.³⁶

³⁵ As Burton Dreben articulated the idea, “it is absolutely essential for Rawls that public reason, one of the basic components of political liberalism, be neutral with regard to various comprehensive doctrines” (2003: 326).

³⁶ In Dreben’s assessment of Rawlsian political liberalism, “a reasonable comprehensive doctrine can be irrational -you can be like Tertullian and say, ‘I believe because it is absurd’. All a comprehensive doctrine has

This dilemma has been highlighted by Timothy Fowler, who raises the case of individuals who believe in a flat earth “or other dubious empirical premise” but at the same time are “law abiding and politically engaged citizens” (2010: 372). To that extent, these parents are politically reasonable while holding patently unreasonable beliefs regarding the factual world. Within the framework of political liberalism, they would be entitled to pass these unreasonable beliefs to their children through educational institutions.³⁷ The paradox of liberal neutralists, in Fowler’s view, is that a strictly political approach to education leaves many children severely exposed to obviously incorrect or distorted factual claims - such as creationism - that might be seriously detrimental to their prospective careers.³⁸ Fowler then suggests that every time the mandatory curriculum attempts to ascertain the truth of a factual or empirical claim - as it does in the biology section when it declares that mainstream evolutionary theory is most likely to be true - it is tacitly committing itself to a non-purely political but perfectionist aim.

Although this is not the place to explore in detail the debate between educational neutralists and educational perfectionists, some very general considerations are due. In a broad sense, liberals who defend a neutralist approach to education maintain that there are no good reasons to abandon the principle of impartiality towards competing comprehensive doctrines within the classroom.³⁹ In turn, liberal perfectionists who hold that the government is entitled

to do is to endorse a liberal political conception. But outside of that it can hold anything it wants” (2003: 326). In the same vein, Steven Lecce has argued that “as long as people endorse the political conception and respect each other’s rights, the epistemic adequacy of their beliefs should have no bearing upon their equal claims to the benefits and burdens of social cooperation” (2008: 221). Jønch-Clausen and Kappel reiterate the idea, stating that “the crucial characteristic of the reasonable person is her commitment to engage with fellow citizens in fair terms of cooperation and her insight on what she owes her fellow citizen in terms of mutual respect. It is these moral qualities that explain her commitment to impartial reasoning and reciprocal justification in the public realm. Epistemic qualities play a very little part in the make-up of the reasonable person and they mainly function as enablers of moral qualities” (2015: 129).

³⁷ Unless we think, as shown in the previous Chapter, that the civic ends of a liberal education are indissolubly tied to an adequate scientific literacy. For the sake of the argument, here I will assume that we have not made a plausible case for that connection.

³⁸ Back to the example, Fowler asks us to imagine children who are taught in their geography lessons that the Earth is flat, adding that “there is something intuitively worrying about teaching children such obviously bizarre beliefs as truths. However, consider how difficult it is for political liberals to object to an upbringing which put forward these beliefs” (2010: 375-376). After all, political liberals believe that “it is illegitimate for the state to foster ideals to govern the whole of life, thus the aims of education are restricted to engendering an effective sense of justice. This implies that the state will be silent with regards to aspect of education which are not related to this civic aim... the implication of Rawls’ stance is that a multitude of parents will pass on doctrines which may be dubious or unjustified if viewed from more conventional standards of reasoning” (Fowler, 2010: 373).

³⁹ Among the anti-perfectionists, Matt Sensat Waldren has argued that, “given that liberal neutrality is necessary for legitimacy, and a commitment to it entails a commitment to educational neutrality, the educational neutrality should constrain educational policy for a state to be legitimate” (2013: 77). More controversial is the inclusion

to promote certain basic values think that neutrality is as impracticable as it is undesirable as a normative ideal, either in the legislature or the school curriculum.⁴⁰ Somewhere in the middle we find liberals that generally endorse anti-perfectionism but nonetheless approve of perfectionist measures when they concern children; after all, it is fair to be paternalistic vis-a-vis non-adult members of the polity. For the latter, a moderate perfectionist curriculum is unproblematic: schools are legitimated to enlighten children and adolescents about specific avenues to the good life, and perhaps even to promote some comprehensive values.⁴¹ As Tim Fowler shares the latter view, which he has branded as “restricted” perfectionism, the fact that scientific education reveals a perfectionist impulse is not normatively troublesome.⁴² This way, the exclusive teaching of Darwinian evolution in the science classroom does not *need* to be defended as religiously, philosophically or metaphysically neutral, as most liberals attempts do. Instead, to Fowler’s mind, the right reason to support the exclusive teaching of mainstream evolutionary theory, and therefore to keep ID outside the biology curriculum, “is that [Darwinism] is likely to be true, and if true represents a profoundly important truth about humanity and our connection to the rest of life on Earth”, a reason that “gives ground to support a perfectionist view of upbringing” (2015: 21).

To sum up this view,

of Rawls in this category. He stated that “we try to answer the question of children’s education entirely within the political conception”, adding that the sole societal interest in their education “lies in their role as future citizens, and so in such essential things as their acquiring the capacity to understand the public culture and to participate in its institutions, in their being economically independent and self-supporting members of society over a complete life, and in their developing the political virtues, all this from within a political point of view” (2005: 200). Although Rawls recognized that the term neutrality was equivocal, I think it is safe to say that he was not overtly perfectionist in the realm of education.

⁴⁰ George Sher expresses this view asserting that “when governments can elevate its citizens’ tastes, characters, aspirations, and modes of interaction, these too fall within its legitimate aims” (1997: 246). Perfectionist considerations, thus, “can be expected to play a role in many areas of political decision making [like] educational policy...” (Sher, 1997: 246).

⁴¹ Brian Barry, for instance, has argued that beyond the social interest in children lies another public stake “in the form of a paternalistic concern for the best interests of the children themselves...” (2001: 209). In this sense, Barry believed that “a state might pursue on behalf of the children... knowledge and appreciation in its own sake -or more precisely, for the sake of living well” (2001: 211). Barry makes clear that the type of “education for citizenship” so dear to Rawls “is not a paternalistic objective” (2001: 222). In the same vein, Harry Brighouse has argued that “neutrality is an inappropriate constraint on the state regarding policies concerning children” (1998: 737). This is because “children are not yet intimately tied to conceptions of the good, and we do not think that respecting the ties they do have is either a condition of legitimacy of the state or of treating them with respect” (Brighouse, 1998: 738).

⁴² Restricted perfectionism “combines a perfectionist account of upbringing with the anti-perfectionist restriction on various actions when it comes to adults” (Fowler, 2014: 306). Thus, “schools might promote values and beliefs which are more than merely political but which might form part of a wide array of comprehensive doctrines” (Fowler, 2014: 317).

- (i) Evolutionary theory is arguably a scientific truth and ID is most certainly false;
- (ii) The liberal state discharges its educational duties by promoting true knowledge and discouraging false beliefs, in science and elsewhere;
- (iii) The liberal state discharges its educational duties by teaching evolutionary theory and excluding ID from the science curriculum.

The bottom line of this objection is that educational neutralists are prevented from demanding the teaching of true knowledge to the exclusion of false beliefs. If compulsory schooling is already securing functional citizenship, the rest of the curriculum can be shaped by the distinctive substantive orientations that legitimately coexist in a pluralist society. Thus, the objection goes, premise (ii) can only be endorsed from a perfectionist approach. Once we have accepted (i) and (ii), conclusion (iii) imposes itself. All things considered, Fowler's reasoning provides an alternative ground to reject the CC. But it is important to note that it is built on the premise that scientific education is not neutral but expresses a perfectionist aim. Therefore, science cannot be public reason.

To tackle this objection and reassert the place of scientific methods and conclusions within the strict political conception, we must take a short detour into the relation between perfectionism and scientific knowledge. Perfectionism, as we know, is about political power enrolling its resources to steer individuals into valuable life projects, and away from less enlightened ones. Hence, to argue that promoting true knowledge and discouraging false beliefs commits liberal education to (restricted) perfectionism, we must think of the transmission of true knowledge as having an inherent ethical value. In turn, the teaching of manifestly wrong truth-claims would carry an intrinsic disvalue. But why is the promotion of true knowledge, of the kind delivered by science, intrinsically valuable?

One possible answer is to claim that access to trustworthy knowledge is constitutive of the notion of meaningful well-being. According to the late philosopher Derek Parfit, it is possible to agree on a shortlist of intrinsically valuable things and such a list includes knowledge.⁴³ To this account, it would be odd for a rational person to reject the worth of getting a better understanding of the world around us. After all, we thrive when we expand our knowledge

⁴³ In Parfit's view, "certain things are good or bad for people, whether or not these people would want to have the good things, or to avoid the bad things. The good things might include moral goodness, rational activity, the development of one's abilities, having children and being a good parent, *knowledge*, and the awareness of true beauty. The bad things might include being betrayed, manipulated, slandered, deceived, being deprived of liberty or dignity, and enjoying either sadistic pleasure, or aesthetic pleasure in what is in fact ugly" (1984: 499).
Italics are mine.

of reality and we are close to failure when we act on erroneous information. If this knowledge can be presented as objective, that is better still. Objective knowledge provides humankind with an accurate navigation map to reality.

A second answer, advanced by Thomas Hurka (1993), rests on the assumption that human beings naturally crave knowledge. Accordingly, the acquisition of knowledge contributes to perfecting our innate tendencies.⁴⁴ Among other activities, we seek factual understanding by devising scientific hypotheses and putting them to test. Our invariable guiding question is whether these propositions are true or false. Following Hurka, Sher contends that “if what has inherent value is the successful exercise of fundamental capacities, it would be very surprising if reason-based true belief -or, in other words, knowledge- were not inherently good” (1997: 203). This would be the perfectionist core of scientific reasoning.

Both formulations are undergirded by the premise that we are on our way to living better lives by incorporating the kind of knowledge that science provides, either because it is objectively good for us to have it (whether we subjectively desire it or not), as Parfit suggests, or because it further develops our natural dispositions to distinguish true from false belief, as Hurka and Sher indicate. From this narrative, it follows that liberal education has a duty to teach true knowledge because it aims to perfectionate future citizens. As we already *know* that Darwin was basically right about the mechanism underlying the grand-process of organic change, to deny or water-down its seminal theory amount to alienate students from such perfection. This argument applies not only to evolutionary biology. The full science curriculum could be justified along the same logic, including the geography lessons with which Fowler was concerned. As these subjects are all intended to transmit truths about the world, it seems that they cannot but embody perfectionist aims.

All of this is very well, but I shall reply that none of it makes scientific education perfectionist in the sense that is commonly used by political philosophers: as opposed to political or neutralist liberalism. To begin with, let us remind ourselves that scientific education is not only about knowledge of specific theories in physics, chemistry or biology, but also about understanding the epistemic virtues of the scientific method. This method, we have maintained here, embodies a series of procedural values that can be recognized as neutral in the relevant sense. The neutrality that political liberalism advocates does not depend on being value-free. Neither scientific reasoning nor public reason in general are value-free. But they

⁴⁴ As George Sher has put it, humans “have a native capacity to understand the word and an inescapable tendency to try to exercise that capacity” (1997: 203).

fit with the requirements of liberal neutrality in the sense that they are fair to all parties. As Rawls describes it,

“A neutral procedure may be said to be one justified by an appeal to neutral values, that is, to values such as impartiality, consistency in application of general principles to all reasonably related cases, and equal opportunity for the contending parties to present their claims. These are values that regulate fair procedures for adjudicating or arbitrating between parties whose claims are in conflict. The specification of a neutral procedure may also draw on values that underlie the principles of free rational discussion between reasonable persons fully capable of thought and judgment, and concerned to find the truth or to reach reasonable agreement based on the best available information” (2005: 192).

These procedurally neutral values are thus consistent with the methodological virtues that we expect from science as an ideal endeavor. Scientific education does not become perfectionist just because it promotes these values. If the promoted values outline the importance of making impartial judgements based on evidential assessment, they are neutral values in the sense that they do not endorse a sectarian viewpoint. If they are values that appeal to citizens from different backgrounds and recognize them as morally equal agents in their capacity to put forward competing claims, they might merit to be considered akin to political values. To summarize, the procedural values that science promotes via education are neutral in the sense that they mirror the values of public reason. By teaching them, the school is not encouraging values that are distinctive or exclusive of a comprehensive doctrine. On the contrary, they must be understood as analogous to political values to the extent that they highlight the justice of impartial procedures when it comes to arbitrating between competing claims.

Secondly, as Parfit acknowledges, the kind of trustworthy knowledge that science can produce is not constitutive of a controversial lifestyle but it should be read as a core element of objective well-being. Accordingly, scientific education is not necessarily nurturing a sectarian worldview but providing skills and resources that are commonly valued. Thus stated, the idea of objective knowledge resonates with the kind of primary goods that every rational individual wants to enjoy. Again, scientific education does not resemble perfectionism but is properly political in its scope. This is even more evident from Hurka and Sher’s line of argument. If the impulse to know the world is innate to human beings,

then it is the reflection of a universal and non-sectarian aspiration. By promoting scientific knowledge, liberal education is doing no more than generating an institutional space to think about the character, limits and achievements of a shared cognitive activity.

My overall claim is that the problem for political liberalism is not that it shows an epistemic preference for a specific knowledge-generator. The problem would only arise if such a preference cannot be publicly (neutrally) justified. Only in such a case might we need to recourse to a perfectionist argument. Thus, the crucial point is whether scientific education - which comprises both the transmission of a certain body of knowledge as well as the promotion of certain methodological virtues - can be publicly justified to all. If we can appeal to scientific reasoning to settle controversial factual claims to people from different cultural backgrounds and with different conceptions of the good, then scientific education does not need a perfectionist defense, as Fowler believes. It happens that the value that Parfit, Hurka and Sher are outlining is entirely compatible with public justification.

4. **The Plantinga – Postmodernist Connection.**

All the objections covered in the last two sections are somewhat internal. But there is another much more fundamental objection which disputes the capability of any epistemological baseline to ground public justification. Accordingly, the specific problem with preferring a scientific epistemology lies in the fact that it is as sectarian as any other.⁴⁵

Let's recall the central aspects of Plantinga's case against SEB. As explained in Chapter VI, Plantinga's argument is twofold. On the one hand, it states that Darwinism should never be taught as the settled truth in the science classroom to the extent that it contradicts important theistic beliefs about the same subject matter. Thus, as a matter of liberal fairness, creationist views should be rehabilitated into the mandatory curriculum. That is the substantive CC. On the other hand, at an epistemic level, the complaint is that children are being told that the right way to resolve disagreements over factual reality by way of evidence-based science. This would be illegitimate in the face of political liberalism insofar as citizens in pluralistic societies

⁴⁵ Echoing this objection, Jønch-Clausen and Kappel argue that scientific reasoning might not be public in the Rawlsian sense insofar "we need further explanation as to why it is that widely accepted scientific facts and methods are not to be considered sectarian, when minorities find them deeply controversial" (2015: 128). They go on to suggest that the answer should point to the notion of reasonableness. But, as they further recall, reasonableness is a political and not an epistemic requirement.

embrace alternative epistemic commitments. Some religious communities might want to reclaim their own ways to address factual questions. This is the nub of Plantinga's challenge: there is no need to deny that naturalistic-by-default evolution is probably the best explanation from SEB, but there is no cogent way to justify SEB under the rules of liberal fairness. Therefore, our institutions, including those that work out the compulsory curriculum, should not prefer SEB if they are to avoid an injustice to those parties that might have a different epistemic baseline from which to develop truth-claims about the world.

A brief point of clarification is due. In most cases, when creationists accuse science of epistemological bias, they are targeting the argument for intrinsic MN. Recall that MN stands for the principle that science simply cannot deal with supernaturalistic hypotheses. But, as explained at length in Chapter IV, this work does not endorse MN as a principled position. Instead, I have stressed that the territorial character of the competing hypotheses should be irrelevant if we are to demarcate science in a way that is consistent with religious neutrality. Accordingly, political institutions ought to remain impartial between rival metaphysical assumptions about spatiotemporal causation, which can only be done by refusing to adjudicate *a priori* on their plausibility. In other words, we have taken pains to rule out MN by advancing an argument that creationists are compelled to accept: that their theories are welcomed to compete, but with no guarantee that they will prevail. Instead, the present objection goes deeper: it is a general case against science as the mode of inquiry that is publicly justified to adjudicate between competing factual claims in liberal pluralistic democracies.

Thus presented, this is not an extravagant or isolated criticism. Postmodernist thinkers often stress that it is not possible to acquire objective knowledge about reality and therefore science should be regarded as controversial as any other epistemology. Overall, they suggest that science is only a culturally shaped way to look at nature, thus without universal reach. The postmodernist view would thus agree that there is no base for granting science a privileged status within political justification. But postmodernism is an expansive and rather loose umbrella that shelters different ideological strands. It is a discourse that has been wielded from leftist quarters and right-wing camps alike. Among the former, some of its voices claim that modern science perspires the hegemonic interests of the ruling class or the ruling gender.⁴⁶ Among the latter, the blame falls on the ruling bureaucratic elite or the intellectual

⁴⁶ As briefly hinted in the Chapter II, certain strands of feminism argue that the historic project that goes by the name of science has been mainly another cultural tool for male domination. For a seminal work in this area, see Sandra Harding's *The Science Question in Feminism* (1986). A good compilation to reply to these feminist

globalized establishment. Creationists are indeed worldwide associated with right-wing movements, whether religious or nationalists. However, these ideological features are not an impediment for them to agree with the structure of the feminist critique, only this time denouncing mainstream science as a secular narrative to eliminate God. In some way, it seems that both feminism and creationism are eager to point out that science did not fulfill the Enlightenment aspiration of transcending sectarian biases and politically-loaded agendas to reach objective and valid-for-all knowledge.

This is not the place to assess, let alone to reply to, the variety of postmodernist critiques of mainstream science.⁴⁷ I will only focus on the way in which creationists are rehearsing some of its core elements. In fact, creationists have found an unlikely but powerful ally in the postmodernist narrative to undermine the epistemological credentials of science: if there is no objective standpoint from which to measure the validity of scientific claims, citizens do not have any cognitive obligation to abide by the methods and conclusions of conventional science. Instead, citizens can just stick with the epistemological baseline that better suits their prior metaphysical assumptions and background cultural commitments. In the words of Meera Nanda, assessing the rise of the so-called Vedic Science in India, the postmodernist assault on science has proven to be “a blessing for all religious zealots, in all major faiths, as they no longer feel compelled to revise their metaphysics in the light of progress in our understanding of nature in relevant fields” (2005: 223).

There is an interesting parallel between the Vedic Science that has re-emerged in an allegedly patriotic guise and what Plantinga calls Theistic Science (TS). In both cases, the project is about affirming a set of distinctive epistemic conditions to produce knowledge-claims about the world. According to Plantinga, Christians should develop their own approach to scientific subjects such as biology. As they already *know* that God is the efficient cause for every creature who has ever lived, Christians should be ready to reject those bits of secular science which are hard to reconcile with their overall theism.⁴⁸ In this sense, Plantinga’s challenge

concerns about science can be found in Noretta Koertge’s (ed.) *A House Built on Sand: Exposing Postmodernist Myths About Science* (1998).

⁴⁷ For a review of the postmodernist critique on science, see Sean Devine’s short article on *Postmodernism and Science* (2004). For a science-committed response that roughly represents my own thoughts on the matter, see Marcel Kuntz’ *The postmodern assault on science* (2012).

⁴⁸ In Plantinga’s own formulation, “what we need when we want to know how to think about the origin and development of contemporary science is what is most plausible from a Christian point of view... we shouldn’t reject contemporary science unless we have to” (2001a: 139-140). This is not restricted to biology: “In all areas of the academic endeavor, we Christians must think about the matter at hand from a Christian perspective; we need Theistic Science... What we really need are answers to our questions from the perspective of all that we

goes deeper than the one articulated by Phillip E. Johnson and many ID advocates. Johnson does not necessarily dispute the evidentialist core that characterizes modern science. He is rather arguing for the right of supernatural hypotheses to be considered, and this thesis' verdict is that liberals should give that to him: ID theory can rightfully compete for the best explanation, even though such competition entails the possibility of losing.⁴⁹ Plantinga's claim is slightly different: he wants to emancipate Christians from the epistemological constraints that govern mainstream science. As Keith Parsons has put it, Johnson is an integrationist while Plantinga is a separatist.⁵⁰

The above argument puts Plantinga and the postmodernists on the same side, at least when it comes to the normative implications of both stances. Plantinga and the postmodernists agree that there is no straightforward method to grant mainstream science a privileged status in terms of public justification. The postmodernist narrative suggests that all knowledge claims are equally fallible, so it remains arbitrary to elevate one of their sources to a special adjudicatory seat within political debates. If no epistemic baseline is more objective than others, diverse epistemologies "can be mixed and matched in order to serve the needs of human beings to live well in their own cultural universes" (Nanda, 2005: 225). This postmodernist reasoning resonates with the libertarian, multicultural and diversity-based claims that we reviewed in the last Chapter to support Plantinga's 'modest proposal'. Crucially, it is consistent with the notion of a sui generis TS that performs its epistemic job with relative independence from mainstream science.

It is important to note that Plantinga would hardly consider himself a postmodernist. He has rejected the idea that objective knowledge is impossible to attain and therefore that all knowledge-claims are equivalent. As a Christian, Plantinga believes that truth is not a social construction, but it has independent reality, a reality that Christians have within their reach. Hence, even if both agendas are politically compatible, there are important differences between Plantinga and the postmodernists. Insofar as no epistemic system can claim to know

know -what we know about God, and what we know by faith, by way of revelation, as well as what we know in other ways. In many areas, this means that Christians must rework, rethink the area in question from this perspective" (Plantinga, 2001a: 141).

⁴⁹ Johnson seems to accept this possibility. As he puts it, "if the naturalistic understanding of reality is truly correct and complete, then God will have to retreat out of the cosmos altogether. I do not think the risk is very great, but in any case, I do not think theists should meet it with a pre-emptive surrender" (2010: 2014). Arguably, a pre-emptive surrender is different from an ex-post recognition of defeat.

⁵⁰ In Parsons's analysis, "Plantinga is saying that Christians who are scientists should feel free to break from the mainstream and form communities where science is pursued on the basis of Christian's own epistemological and methodological principles" (2005: 165).

reality as it is and therefore our best science remains just a cultural construct, postmodernists defend the communal right of communities to be “free to pick and choose and mix various facts, as long as they do not disrupt their own time-honoured worldviews” (Nanda, 2005: 228). In turn, Plantinga denies that we cannot make truth-claims based on objective knowledge about the world. On the contrary, it is because he believes theism to be true that Christians are entitled to freely “pick and choose and mix various facts, as long as they do not disrupt their own time-honoured worldviews”. For Plantinga, the theistic truth - metaphysical, moral and factual - is thus always prior and non-negotiable. At the very least, it should not be treated as secondary to the secular truths delivered by science. Plantinga’s claim, in a nutshell, is that TS should trump SEB when SEB draws conclusions at odds with the rich body of Christian knowledge. The same principle would apply to other cases, such as Vedic Science trumping (foreign) mainstream science when the latter clashes with Hindu knowledge and patriotic considerations. Therein lies the Plantinga – Postmodernist connection.

The creationist conundrum is that culturally secular societies often frame debates around science and religion as conflicts between objective knowledge and sectarian belief, respectively: the former belonging to the realm of hard facts, the latter filling up the sphere of private opinions. Longstanding liberal critics such as Stephen Carter, Stanley Fish and Michael McConnell have denounced the falsity of this dichotomy. In their view, secular standards of reason - whose most emblematic expression is scientific reasoning - are not truly shared but indeed contested by sincerely religious citizens. They would also belong to “the realm of particular - angled, partisan, biased - assumptions and agendas” (Fish, 1987: 998). Recall that authors such as Gutmann, Barry and Macedo suggested that secular standards of reasoning were indispensable for a competent citizenry in liberal democracies. However, the liberal critics reply that scientific and religious knowledge-claims embody two distinctive ways of thinking, two equally legitimate epistemological devices in pluralistic societies. Occasionally, these will compete for the same explanatory space. Thus, in the same way that Rawls’ principles of justice were originally reported to express an individualist bias, these critics hold that political liberalism cannot conceal its unaccounted favoritism for a strictly cognitivist strategy over other respectable ways of knowledge.

If this criticism is sound, liberals would be unable to publicly justify the epistemic privilege of science. Conversely, they will be bound to recognize that political liberalism is not epistemically neutral in the relevant sense, but it shows a preference which is impossible to

square with the principle of legitimacy. The objection is not that an alternative epistemic baseline should replace science within the framework of public justification when it comes to accounting for factual reality; rather, it is that the liberal quest for a common epistemic ground to produce objective knowledge is ultimately delusive.⁵¹

To sum up, Plantinga's TS reasserts the right of religious communities to make use of scientific insights, but with a proviso: if needed, these are to be rearranged for the sake of a theologically coherent picture of reality. In other words, even if noncontroversial, the methods and conclusions of science will not be binding for them. This is politically problematic since the whole appeal of public reason rests on its capacity to be justified, and therefore binding, to all citizens. Thus, if the case for SEB as public reason is hopeless, the Plantinga–Postmodernist connection proposes to understand all competing epistemologies as valid to deal with factual disagreement, which entails that no one will be politically preferred.⁵²

5. Rawls and Naturalized Epistemology.

The Plantinga–Postmodernist connection illustrates the fundamental skepticism that surrounds the liberal project of identifying a public epistemology at the service of political legitimacy. To address this objection, there is no need to dispute that the scientific method constitutes a distinctive way of generating knowledge and grounding beliefs about the world. Likewise, there is no need to argue that other epistemic routes in pluralistic societies should be discarded as irrational. As explained, political liberalism is not embracing Scientism. Still,

⁵¹ In this vein, McConnell has dismissed “that there is any common epistemic method (“reason”) that undergirds each of these fields [of science and religion]. We judge different matters by different standards of evidence and by different faculties of the human mind, and we cannot expect agreement as to what those standards are, or how to employ the different faculties” (2000: 27).

⁵² This point is well described by Francis Beckwith (2005), who imagines a discussion between a neurophysiologist who affirms that thoughts are entirely the result of firing neurons in the brain – thus the mind would be an epiphenomenon without material reality - and a philosophical theologian who argues for the existence of the soul - and therefore dismisses the neurophysiologist's materialist interpretation. Beckwith argues that most liberals want to think that the former is advancing a public epistemology, insofar it provides *real* knowledge, and the latter a merely private, religious opinion, at best. But there is actually no higher adjudicative mechanism to rule it that way, unless one is willing to admit that liberalism has a prior commitment to a particular epistemology and perhaps even a metaphysical worldview. If one is not, in order to save liberalism' political project Beckwith concludes that the arguments wielded by the philosophical theologian should be seen as public as well.

political liberalism is singling out scientific reason. The only way to justify this preference is by showing that a scientific epistemology can be connected to all reasonable comprehensive doctrines, whatever their other epistemological commitments. In other words, we should argue that scientific reasoning is the expression of cognitive operation that is fundamentally common and thus overlapping.

This is where Rawls' (implicit) commitment to a *naturalized* epistemology (NE) needs to be spelled out and duly acknowledged. In a nutshell, NE argues that science is continuous with common reasoning. Accordingly, scientific reasoning is no more than the sophisticated and systematic application of the common tendency to abide by the available evidence with the purpose of successful navigation through factual reality. All people, no matter their comprehensive allegiances, thus carry an innate predisposition for scientific reasoning. For diverse reasons, some citizens will upgrade such innate predisposition into a professional activity. But the bottom line is that the difference between scientific and common reasoning is a matter of degree and not one of fundamental character.⁵³

NE became popular through the work of the philosopher W.V.O. Quine, with whom Rawls shared long years at the same Harvard department. Quine argues:

“We imbibe an archaic natural philosophy with our mother’s milk... But the process is one of growth and gradual change: we do not break with the past, nor do we attain to standards of evidence and reality different in kind from the vague standards of children and laymen... Science is not a substitute for common-sense, but an extension of it. The quest for knowledge is properly an effort simply to broaden and deepen the knowledge which the man in the street already enjoys, in moderation, in relation to the commonplace things around him” (1957: 2).

Science is, for Quine, itself a continuation of common sense reasoning. The professional scientist and the ordinary citizen share the same cognitive respect for the evidence, “except

⁵³ As explained by the philosopher of science Marteen Boudry, naturalized epistemologists recognize that modern science is a highly complex and differentiated social endeavor, but they believe that “the practice of hypothesis testing and ampliative reasoning underlying science is already apparent in everyday reasoning (e.g. tracking animals, fixing a car). None of the characteristic features of modern science -the use of sophisticated technical equipment, formalization and mathematical tools, the system of peer review and public presentations, the years of formal training and practice- detach scientific reasoning from everyday knowledge acquisition. The complex institutional organization and systematic methodology of science can be seen as a highly refined and sophisticated extension of everyday reasoning, reflecting a heightened awareness of human cognitive foibles and a preoccupation with difficult, cutting-edge questions of a more theoretical nature” (2013: 82).

that the scientist is more careful... [his] increased care is not a revision of evidential standards, but only the more patient and systematic collection and use of what anyone would deem to be evidence” (Quine, 1957: 5). If the conclusions to which the scientist and the layperson arrive are different, this is not because they disagree on the role of evidence to settle the issue, but only because the scientist, most probably, has subjected such evidence to a more demanding filter. In a slogan, then, we are all potential scientists. The professional scientist, as Quine believed, “begins with the primitive sense of evidence which he possessed as layman, and uses it carefully and systematically... By putting nature to the most embarrassing tests he can devise, the scientist makes the most of his lay flair for evidence” (1957: 6). But science is not the same as common sense reasoning either. Science gets ahead of common-sense because it “introduces system into his quest and scrutiny of evidence” (Quine, 1957: 6).

Although perhaps Rawls never classified himself as a naturalized epistemologist, my claim is that he follows Quine on this matter. Understanding Rawls within a NE framework is helpful to grasp the ultimate coherence of the inclusion of scientific reasoning as properly public. If public reason is common sense - as Burton Dreben put it, “in the best sense of common sense” (2003: 345) - then scientific reasons should be regarded as public in the Rawlsian sense.

Quine’s epistemology goes further. He maintained that the methods of natural sciences were by far our best epistemic tools to acquire knowledge. Moreover, that knowledge itself should be studied within the framework delivered by these sciences, as if the whole project of epistemology could be reduced to a “chapter of psychology” (Quine, 1981). In this respect, critics have pointed a problem of circularity: we consider that natural sciences are the best knowledge-generator because those very sciences told us so.⁵⁴ The only way to escape this circularity was, to Quine, by appealing to the effectiveness of the scientific method. Quine’s philosophical preference for science is therefore pragmatic: it works.⁵⁵ As Taschetto has argued, Rawls’ attempt to situate ethical theorizing within the confines of empirical sciences is also pragmatically oriented. Thus, political liberalism prefers SEB because individuals in pluralistic societies need a workable procedure to settle public disagreement, and so far in

⁵⁴ In Diana Taschetto’s reading of Quine’s theory, “science is the measure of both what there is (ontology) and how we know there is (epistemology)... Quine insists that our ontology (physicalism) tells us that our epistemology is reliable and our epistemology tells us that ontology is warranted, both of these claims are part of science itself, and are, consequently, mutable and fallible” (2015: 151, 153).

⁵⁵ As Taschetto puts it, “the full weight of Quine’s pragmatism lies on his naturalism, for it turns an obvious weakness (circularity of justification) into overpowering strength (effectiveness)” (2015: 153).

human history, the most trustworthy procedure seems to be the scientific method. Its success can be indeed intersubjectively appraised.⁵⁶

However, we should not follow Quine all the way down to explain the basic epistemic assumptions of political liberalism. Although I believe that Taschetto is right in pointing out that Rawls is constantly seeking a set of scientifically-minded rules to think about political morality – and that Quine’s influence might have been important in this respect - I do not think that science has its privileged place in the justificatory structure for pragmatic considerations alone. The problem with comprehensive views is that they express non-public values, not that they are ineffective. Accordingly, the political conception does not rest on pragmatism but on objectivity. Pragmatism is not the opposite of subjectivity, objectivity is. Liberals should prefer science-based epistemologies because they reflect something we all have in common, beyond their effectiveness.

I am personally inclined to believe that science works *because* it is a sophisticated version of our native capacity to read the book of nature. If we were too bad at it, we would be extinct by now. As Quine once suggested, “creatures inveterately wrong in their inductions have a pathetic but praiseworthy tendency to die out before reproducing more of their kind” (1969: 13). Indeed, many naturalized epistemologists adopt an evolutionary standpoint to the problem of objective knowledge. The argument is as follows: we have succeeded as species since we have developed a capacity to match our sensorial perception with the ontology of the world. This is not the same as to assert that we have evolved to discover fundamental truths, only that our cognitive apparatus has evolved to keep us alive and multiplying, both purposes that depend on a fairly accurate appraisal of our material surroundings. The scientific method, Popper also believed, is the logical upshot of evolution fine-tuning its epistemic resources. This is the ultimate defeat for those who maintain that scientific reasoning is sectarian or esoteric. Our very presence here is testimony to the contrary.

Rawlsian political liberalism is therefore consistent: it prefers SEB over its alleged alternatives insofar as SEB expresses a cognitive capacity that is ultimately shared despite the fact of comprehensive pluralism. This capacity, shaped by our evolutionary past, represents the human power to understand basic evidence about the spatiotemporal structure of the world, and from there, to furnish intersubjective knowledge-claims about it. It is a capacity that

⁵⁶ Strictly speaking, intersubjectivity refers to the capacity of being established for two or more subjects. For the purposes of my claim, a wide intersubjective agreement amounts to objectivity. These categories are usually interchangeable in the case of the epistemic accessibility of claims about physical reality.

appears to precede Rawls' two moral powers: the capacity for a sense of justice and the capacity for a conception of the good. I shall refer to this epistemic capacity for evidence-based knowledge as a rational power, required for political life.

Surely, the claim that political liberalism assumes a NE standpoint for the purposes of the PRS is open to disputation. However, assumptions are commonly made in moral philosophy. Rawls himself stated clearly that some assumptions can be taken on board and remain consistent with the whole project.⁵⁷ In this case, the unspoken assumption is that scientific reasoning is continuous with everyday common reasoning, which explains science's status as public reason. Within this framework, all the responses given in sections 2 and 3 fit into a coherent whole.

For instance, to the charge that scientific reason is a mere associational reason, the NE standpoint replies that while the community of scientists practices the activity at a professional level, political liberalism singles out their method rather than their affiliation because it is the method which aims to filter out personal biases and establish a common code for adjudication. It is a common code insofar as, under the NE assumption, all citizens can read it: they can all agree that factual disagreements should be settled through evidential evaluation of competing hypotheses. In other words, the reasons of a scientific association belong to the background culture whereas scientific reasoning as such is deemed to be, at least in principle, universally accessible as it is the continuation of common sense and everyday reasoning.

Regarding the Controversiality Objection, the NE standpoint makes clear that what matters is the method and not necessarily the specific conclusions of science, as ordinary citizens might reject the latter because they lack a systematic apparatus to assess competing hypotheses whereas at bottom they share the Quinean "lay flair for evidence".⁵⁸ The only thing that professional scientists have done, NE contends, is perfectionating a raw universal methodology that we all treasure as an expression of our innate powers to perceive the world.

⁵⁷ He believed it was impossible "to develop a substantive theory of justice founded solely on truths of logic and definition. The analysis of moral concepts and the a priori, however traditionally understood, is too slender a basis. Moral philosophy must be free to use contingent assumptions and general facts as it please" (Rawls, 1999: 44).

⁵⁸ As Quine puts it, "if the scientist sometimes overrules something which a superstitious layman might have called evidence, this may simply be because the scientist has other and contrary evidence which, if patiently presented to the layman bit by bit, would be conceded superior. Or it may be that the layman suffers from some careless chain of reasoning of his own whereby, long since, he came wrongly to reckon certain types of connection as evidential: wrongly in that a careful survey of his own ill-observed and long-forgotten steps would suffice to disabuse him" (1957: 6).

Thus, it makes complete sense that the Rawlsian non-controversiality requirement should be assessed against the benchmark of actual scientific consensus. In this sense, it is tempting to see scientists as invested with a special kind of representativeness. In a way, their findings are humanity's common achievements. That is why, besides a sense of excitement, we feel a diffuse but still recognizable pride when we learn about the exploits of science, from watching a man on the moon to cracking the genome. Science's triumphs are to some extent our triumphs.

What about objections targeting the very NE assumption? The first one can be articulated as follows: everyday reasoning is plagued with confirmation biases, which is the opposite to science's aim. As previously mentioned, ordinary people do not assess the evidence for a given hypothesis or claim from a blank slate, but from their own ideological allegiances. Then, perhaps, the layperson and the scientist are doing something of a different kind. The response should be straightforward: from a liberal perspective, aimed at political objectivity, we value science precisely for its alleged capacity to filter out many of those biases. Everyday reasoning expresses the Quinean "lay flair for evidence" in a crude and unrefined way, which is vulnerable to confirmation biases. Science enters the picture to systematize such a flair and reduce its cognitive vulnerabilities. Thus, political liberalism does not have to deny the psychological fact of cultural cognition. It actually recognizes it through the burdens of judgment. But the status of scientific reasoning as public is due to a different type of recognition: that the raw tendency to abide by the available evidence is universal.

A second objection in the same direction points to the claim that many contemporary scientific theories are far from commonsensical: they suggest conclusions that not only are inaccessible to untrained minds but, crucially, remain at odds with our everyday understanding of spatiotemporal phenomena. This is certainly true about current trends in theoretical physics. What is commonsensical about superstring theory? Is it possible to square everyday reasoning with quantum mechanics? What about interstellar dimensions?⁵⁹ So it seems that our brains are simply unprepared to deal with the science of the very-very small and the science of the very-very big. The same might be said about Darwin's findings. As we are used to moulding the world according to our creative designs, a top-down explanation about the shape of living things makes, *prima facie*, more sense than a bottom-up alternative. As soon as Darwin's masterpiece was published, his 19th century critics could not

⁵⁹ NASA has recently uncovered the existence of a series of exoplanets which may harbor life. People around the world got excited, until they were told that the system -named TRAPPIST-1 - was located at about 40 light-years (235 trillion miles) from Earth, which is simply an incommensurable distance to our ape-like brains.

bear what they denominated as a “strange inversion of reasoning”.⁶⁰ In fact, as Daniel Dennett has concluded, “many people can’t abide Darwin’s strange inversion. We call them creationists. They are still looking for skyhooks— ‘irreducibly complex’ features of the biosphere that could not have evolved by Darwinian processes” (2009: 10062).

However, this objection is not unassailable. NE can reply that, again, there is nothing surprising about laypeople having troubles in understanding some scientific theories from an unfiltered perspective. What is common is the “flair for evidence”, not necessarily the capacity to think in highly abstract and complex ways. Once the evidence has been worked out through the scientific method, some conclusions appear hard to grasp. However, their full explanatory force is expressed when these theories turn out to be fundamental frameworks to understand a whole set of related phenomena, as happened in fact with evolutionary theory and the general theory of relativity. Only then can people gradually start to see how everything fits together. As one of the marks of a proficient scientific theory is its capacity to make predictions, an originally counterintuitive hypothesis stops being counterintuitive when it has proved systematically fruitful. Here, our deeply rooted - but mistaken - intuitions act like confirmation biases that should be overcome through good scientific thinking. So even if Darwinian evolution seems to defy common sense at a very basic level, it was precisely the rigorous and methodical upgrade of common sense that gave us the theory of evolution by means of natural selection.

More importantly, a NE perspective delivers a powerful argument to outline the universality of scientific reasoning. While liberal critics argue that science as a mode of inquiry does not suit religious minds, political liberalism replies that science is a common mode of inquiry to the extent that it is wired into our brains, religious and nonreligious alike. Both have the innate tendency to abide by the evidence. By evidence I mean a familiar idea: a body of facts, data or information that indicates whether a belief or proposition is true or valid. Burdens of judgment notwithstanding, the Rawlsian premise is that individuals from diverse backgrounds will agree that factual disagreements should be adjudicated on the best available evidence. Rawls acknowledges that the evidence can be conflicting and sometimes it will not

⁶⁰ The expression was originally articulated by Robert Mackenzie as follows: “In the theory with which we have to deal, Absolute Ignorance is the artificer; so that we may enunciate as the fundamental principle of the whole system, that, IN ORDER TO MAKE A PERFECT AND BEAUTIFUL MACHINE, IT IS NOT REQUISITE TO KNOW HOW TO MAKE IT. This proposition will be found, on careful examination, to express, in condensed form, the essential purport of the Theory, and to express in a few words all Mr. Darwin’s meaning; who, by a strange inversion of reasoning, seems to think Absolute Ignorance fully qualified to take the place of Absolute Wisdom in all of the achievements of creative skill” (quoted in Dennett, 2009: 10061).

be easy to arrive at the same conclusions. But this does not mean that the adjudicative role of evidence is unknown or dismissed. Of course, there is always room for disagreement over which evidence is weightier or what proofs should be counted. But as soon as the parties are willing to assess a given truth-claim based on the best available evidence, they are all accepting the basic features of evidentialism as a form of epistemic justification.

At this point, creationists have two alternatives. They either reject evidentialism altogether or else they contend that the relevant evidence lies on their side. The first route is commonly known as Fideism, i.e. the notion that the veracity of religious claims depends on faith or revelation rather than on rationalist epistemological modes. If they take this route, however, their claim to have creationism included in the science curriculum remains disciplinarily misplaced, and therefore normatively vacuous. Science has been presented here as a broad mode of inquiry that does not rule out supernatural hypotheses a priori, but it cannot renounce to its epistemic justificatory core, which is evidence-based. Hence, any strategy that discards the role of scientific evidence and instead embrace a form of Fideism would imply the immediate capitulation of the CC. They might still succeed if the target is a module in religious and ethical studies, but not in the science curriculum.

The second route is to accept the fundamentals of an evidence-based epistemology, that is, that a knowledge-claim is epistemically justified if the available evidence is on its side. In fact, many religious traditions claim that their beliefs are supported by different kinds of evidence. As we review in Chapter III, this was indeed the epistemic programme of the web of natural theologies that reigned before Darwin: the idea that God and its attributes were knowable through rational means of observation without resorting to divine revelation. Current reformulations of the old argument from design fit the same evidentialist model. The urgency that some Christians felt to articulate a CS can be interpreted along the same lines: its proponents did not take refuge in faith alone, but instead they put together an evidential case for scriptural claims such as Noah's flood. ID creationism goes one step further: it professedly attempts to compete with mainstream evolutionary biology on the same scientific turf. So, this is ultimately a contest about who has the most compelling evidence. Using Dworkin's nomenclature, these groups are asserting scientific claims not only regarding their *content* - insofar they aim to explain factual reality - but also in their *defence*, to the extent that they are willing to participate with the epistemological rules of science.

Overall, as was shown when we surveyed the rich tradition of theological realism, the idea that God's footprints are somehow detectable across the material universe is accepted

beyond debates over biological processes. From cosmic regularities to quantum indeterminacy, from the laws of nature to the emergence of consciousness, many religious believers think that these features provide robust evidence that there is a hands-on superintelligence in charge. Crucially, this is evidence of the kind that we have rational powers to recognize and assess. Again, this is not to argue that the mind of God can be accounted for by purely scientific means. The claim is more modest: many people believe in gods under the assumption that these gods allow us to have a glimpse of their glory through the observable creation. Thus, there is nothing necessarily conflicting between NE, as described here, and theism. In its most accepted contemporary version, NE is about *reliabilism*, as coined by Alvin Goldman (1994). A justified knowledge-claim is the one that had a reliable belief-forming process. Most religious persons think that they are in possession of a reliable cognitive apparatus through which they can *know* about God. But if their epistemic faculties are reliable to that extent, then they are reliable in general; the building of science has been forged with the same innate epistemic tools that religious people use to track the divine in nature.⁶¹

Therefore, my own claim is that the Quinean “lay flair for evidence” crosses borders between religious and nonreligious people. We all have evidence-detectors wired into our brains, either by evolutionary adaptation or as gifts from a loving deity. In both cases, it is a crucial component of our epistemic powers to navigate the real world. Regarding scientific reasoning, it is just the refinement of cognitive processes that we replicate on an everyday basis. Indeed, a great many of our ordinary actions are based on knowledge that derives from the application of methods, results and theories from the empirical sciences, even if we are unaware of it. There is no difference between evolutionists and creationists in this respect. Popper once argued that the only difference between the amoeba and Einstein “is that, although both make use of the method of trial and error elimination, the amoeba dislikes erring while Einstein is intrigued by it: he consciously searches for his errors in the hope of learning by their discovery and elimination” (1979: 70). What holds for a great scientist and the smallest unicellular organism surely holds for different people. Both evolutionists and creationists walk through life by making use of the method of trial and error elimination that Popper outlines.

⁶¹ As the theologian David K. Clark has put it, if the Christian faith is true, “then it is very likely that God would communicate with believers. God created the belief-system process like human eyesight.... So, it is not difficult to think that God created belief-forming processes that enable believers to sense his presence” (2003: 49).

The problem with creationists is that they are selective deniers: they “resist the conclusions about the history of the universe offered by the public system of knowledge” (Kitcher, 2011b: 155), even though they do not dispute most methods, procedures and judgements that are common in science “and in less elaborate forms, in everyday life” (Kitcher, 2011b: 156). Creationists, for instance, have no quarrel with facts about the shape of the Earth, acceleration due to gravity, or the composition of water. For this reason, Kitcher argues that they embrace a “chimeric epistemology, one including two methods of certifying that can deliver opposite verdicts about acceptance and rejection” (2011b: 157). Holders of chimeric epistemologies dismiss certain parts of the public knowledge in favour of their prior assumptions and basic beliefs. The plea for TS that trumps the conclusions of mainstream science if needed is a case in point.

In the same context, Plantinga has put forward the idea that Christian belief is “properly basic”. As such, it does not need evidential support to be a warranted belief.⁶² However, Plantinga himself is willing to abide by the evidence in many scientific debates. His treatment of ID rests on evidential considerations and probability calculations. Paraphrasing Swinburne, he struggles to make the case that, on our total evidence, design is more probable than not. To my mind, this overall position qualifies as a chimeric epistemology: although Plantinga does not ignore the epistemic credentials of science and runs to its defense when science delivers conclusions amenable to Christian theology, he chooses to ignore scientific claims when these are difficult to accommodate with his overall religious narrative. Plantinga is not alone here. I guess many Christians would enthusiastically cheer the conclusions of a study that reports that prayers have a measurable effect on patients’ recovery after serious surgeries, in the same way that many of them were excited about the possibility that the Turin Shroud contained traces of blood revealing the DNA of Jesus Christ. Once again, this is not to argue that their religious belief is or should be evidential-dependent. Rather, it is to argue that creationists are entirely capable of acknowledging the epistemic power of a claim that is evidentially justified. If they do not do so, it might be that they still believe that evidence is

⁶² Plantinga rejects the epistemic project of natural theology and instead proposes adopting a Reformed Epistemology, which is endorsed by prominent contemporary philosophers of religion such as William Lane Craig, William Alston and Michael C. Rea. Reformed thinkers hold that “belief in God need not to be based on argument or evidence from other propositions at all... [but] the believer is entirely within his intellectual rights in believing as he does even if he doesn’t know of any good theistic argument, even if he doesn’t believe there is any such argument, and even if in fact no such argument exist. They hold that it is perfectly rational to accept belief in God without accepting it on the basis of any other beliefs or propositions at all. In a word, they hold that belief in God is properly basic” (Plantinga, 1981: 42).

on their side. This is fine, as long as all parties agree that factual disagreements should be settled by appealing to the best evidence available.

Plantinga writes that if science is to be properly universal, “it cannot employ assumptions or commitments that are not universally shared... [It must be] maximally inclusive; we can all do it together and agree on its results” (2001b: 354). Once the argument for MN has been removed from the picture, nothing prevents science from being maximally inclusive in its assumptions and commitments. Precisely, the assumption from NE points to the fact that nobody escapes the *lay flair for evidence*. But then Plantinga moves away from this ecumenical picture - what he calls Duhemian science - to argue that “nothing suggests that the Christian scientific community should not also engage in non-Duhemian, Augustinian science where that is relevant” (2001b: 355). I think the latter is an impermissible reply within the political conception, though it remains a legitimate possibility throughout the wide background culture. Within the political module, it has been shown that scientific reasoning is a suitable ground for an epistemic overlapping consensus: there is no reasonable comprehensive doctrine which rejects evidence-based epistemologies as a matter of principle. Some comprehensive doctrines might want to have it both ways: remain within an evidence-based approach while it suits them, whilst keeping an opting-out right in case that the outcome does not. This is basically what Plantinga’s TS entails. However, this argument does not suffice to disprove the NE assumption and the fact that scientific reasoning works as an epistemic overlapping consensus.

Therefore, this is not a conflict between reason and faith – as it is sometimes portrayed - but a debate within the department of human reason, more specifically, within the department of evidential justification of intersubjective knowledge. Through observation, sense perception and intellectual inference - epistemic properties that we all share - the scientific mode of inquiry can be presented as public and thus political in a Rawlsian sense. Evidence-based epistemologies constitute a plausible common ground upon which to decide on factual matters in the sense required by political liberalism. Differences might still exist within the burdens of judgements: scientific and empirical evidence might indeed be conflicting, complex, and hard to evaluate. But this is not the same as to dispute our universal tendency to give special weight to those claims and beliefs that are capable of being justified evidentially. Once we agree on that, science as evidence-based epistemology has the last word.

Summary

The ideal of public reason states that citizens of pluralistic societies should avoid grounding the exercise of coercive political power in their controversial comprehensive doctrines. Instead, they are to appeal to widely accepted beliefs manifested in everyday reasoning, common sense and the uncontroversial methods and conclusions of science. Only through this public justification strategy, the political order remains legitimate for all. This chapter interrogates whether the exclusion of creationism from the science curriculum could be justified within this framework, since Darwinian evolution is indeed supported by an overwhelming scientific consensus. I have called this the PRS.

Section 1 defended the idea of scientific reasoning as a paradigmatic case of public reasoning. It argued that the epistemic virtues of the scientific method mirror the procedural virtues of public reason, such as impersonal assessment of competing hypotheses via evidential and logical proof, remaining faithful to the facts, and being open to changing one's mind in the light of new compelling evidence. It further argued that the conclusions of science represent the products of an epistemic baseline that should be recognized as fair to all parties regardless of their cultural and religious backgrounds. I have thus contended that scientific reasoning aims to an ideal of objectiveness that the political conception also pursues. As such, the methods and conclusions of science stand for a cognitive perspective to be adopted and a knowledge repository to be resorted to, respectively, to ensure public justification.

Section 2 reviewed three strictly internal objections that have been raised against introducing scientific reasons in the political debate as if they were public in the Rawlsian sense. The first one suggested that the constraints that public reason imposes over political discourse do not apply to debates outside constitutional essentials. I have replied that there is no strong reason to exclude curricular debates or climate change legislation from these constraints, to the extent that the values expressed by the duty of civility and the principle of legitimacy should impregnate other non-constitutional but equally coercive areas. The second objection pointed out that scientific reason is ultimately the reason of the scientific community. As such, it represents a non-public but associational reason. I have replied that this objection conflates the reason of the scientists in their professional capacity with the scientific epistemic baseline that citizens recognize as suitable to adjudicate between competing factual claims. While the former might well be an associational reason, the latter remains public reason. The third objection recalled that many scientific postulates are contested by large groups of the population in certain societies, which is indeed the case of Darwinism. To the

extent that they are controversial, they cannot be considered public reasons. I have replied by endorsing an intra-scientific interpretation of the non-controversiality requirement. Such restrictive interpretation is consistent with the aim of public justification, which is precisely to minimize the influx of comprehensive doctrines within the political conception. Furthermore, I have added that what should be uncontroversial are the methods rather than the conclusions, which we tend to accept or reject based on our prior cultural assumptions.

Section 3 presented and dismissed three other objections. The first one highlighted the apparent inconsistency between claiming that political liberalism does without the concept of truth, whereas promoting the use of “plain truths” as public reasons. I have explained that only controversial comprehensive truths are not suitable for public justification, but the case is arguably different with scientific facts, which are put forward as “plain truths” in the sense that people take them as objective and thus non-controversial. The second objection suggested that granting scientific reasons a privileged epistemic status within PRS amounts to Scientism, which is itself a comprehensive doctrine. This objection founders on the fact that science is singled out by Rawls for its political capacity to recreate a neutral procedure for adjudication of factual claims, which is far from instilling a worldview in which science is the only source of epistemic authority. The third objection suggested that encouraging scientific reasoning through public education reveals a perfectionist goal, and is therefore not neutral. Instead, I have replied that while the scientific mindset indeed stands for some values, these values are neutral in the relevant procedural sense. As they aim to constitute epistemic common grounds, they mirror the values of public reason. Accordingly, scientific education can be squared within a purely political effort.

However, a more pervasive criticism was introduced in Section 4. Creationists join the postmodernists to argue that it is impossible to grant scientific reasoning the status of public reasoning to the extent that scientific reasoning is just another controversial epistemic standpoint. Accordingly, the ultimate political problem is not that Darwinism makes theistic disbelief more likely for the children of religious parents or even that science is structurally biased against supernaturalism by excluding these hypotheses from the outset, but that the evidence-based standards to adjudicate factual disagreements are not shared by all citizens in pluralistic societies, in which a variety of epistemic commitments are legitimately expressed. Thus, authors such as Plantinga have proposed a right to reject mainstream science when the latter clashes with what people already know given their prior religious beliefs.

The final section provides a rather holistic reply to the above objection. It starts by recognizing that, drawing on Quine's influence, Rawls seems to assume a NE perspective, from which scientific reasoning is continuous with everyday cognitive operations and common sense. Scientists and ordinary citizens alike would exhibit a "lay flair for evidence", only that the former has been trained to elaborate such a natural capacity, a training that involves the systematic ability to filter out confirmation biases. Thus, there is nothing sectarian about scientific reasoning. Much to the contrary, it appears to be a universal tendency, as evidenced by creationism's own efforts to provide proof in favour of its cause. Scientific reasoning remains therefore public reasoning in the sense that it is fundamentally shared. All citizens, religious or nonreligious, possess this rational power in the same way that they possess Rawls' two moral powers.

VIII

Final Thoughts

An Evidence-Based Political Liberalism

Overall, this thesis has attempted to put forward three main ideas. The first one is that liberal political theory has not been treating SCR seriously, under the impression that the only problematic disagreements are moral. However, this ignores that some factual claims are hard to disentangle from more comprehensive views. I have used the creationist challenge to liberal neutrality as a case in point. Here, most responses have come from philosophy of science and philosophy of religion. Concerning the few replies that have come from liberal political philosophy, I have found them wanting. One route has been to downplay the metaphysical and ethical implications of Darwinian evolution as if it were a contained scientific theory without risk of philosophical contagion. Chapter II explained that this is not the case. Another route has been to point out that (true) religion does not overlap with (true) science, and therefore any religiously-motivated claim to the science school curriculum is misplaced. In response, Chapter III restated the validity of theistic hypotheses in factual debates. Finally, in a more sophisticated move, some have affirmed that science is intrinsically tied to MN and thus it cannot deal with supernatural claims. Following Nagel and others, Chapter IV articulated an argument against a principled commitment to MN, thus leaving the door open for SCR.

However, the assertion that factual claims suggesting supernatural agency cannot be discarded from the purview of science without violating religious neutrality does not entail that every SCR should make its way into the mandatory curriculum. Hence, Chapter V introduced the second main idea: we should distinguish between two levels of liberal neutrality. At the first stage, liberal institutions must refrain from adjudicating over the prior plausibility of rival accounts over spatio-temporal causation and metaphysical agency. At the second stage however, these institutions are entitled to adjudicate between competing factual claims through a politically just and epistemically public procedure.

These objectives are embodied in the OPS and the PRS, respectively. This is the third idea: liberals have two alternative but compatible ways to justify the exclusion of creationism from the science curriculum. Drawing on Plantinga's allegedly Rawlsian proposal (to avoid

children of creationist families being pushed into philosophical naturalism), Chapter VI mounts an argument that liberal justice demands that a citizen-to-be receives a set of educational resources which include basic literacy regarding the building blocks of life sciences. This is also a proper response to the substantive leg of the CC: although it might be the case that Darwinian evolution makes theistic disbelief *more likely*, it does not follow from this that we should incorporate creationist elements to have a more religiously balanced curriculum. Here, the core liberal value of justice is aimed at impartiality, which entails that arbitrary contingencies -such as the family we were born into- should not dictate our fate in society.

Chapter VII explored whether the noncontroversial methods and conclusions of science, as formulated by Rawls, belong to the province of public reason. After reviewing a series of objections to that notion with their respective replies, it finally reaffirmed the status of scientific reasoning as properly public given the assumption of a NE, according to which science's deliveries should be interpreted as the refinement of common sense and everyday reasoning. This is also a proper response to the more sophisticated version of the epistemic leg of the CC: once the principled version of MN has been ruled out, scientific reasoning works as an epistemic baseline that is overlapping between different comprehensive doctrines and cultural allegiances. Here, the core liberal value of legitimacy is aimed at objectivity, which entails that the grounds for permissible coercion should be not epistemically sectarian but commonly accessible.

It might be added that these two justificatory routes (OPR and PRS) constitute not only a plausible way to resolve the creationist challenge in its substantive and epistemic dimensions, but they can serve as a framework along which political liberalism tests similar factual-based controversies. However, I might have to concede that some areas of scientific research will not give us the same evidential certainty as biology and the life sciences. Much of contemporary avant-garde science amounts to educated guesses and rational extrapolation. Other areas, such as mathematics, are not methodologically evidence-based. Thus, the modest claim is that this framework is specifically crafted to solve the evolution vs. creationism political debate.

Although highly condensed, this might suffice as a summary. I want to dedicate the last pages of this thesis to reflecting on some of the broader philosophical implications of the positions I have defended here, especially for the project of political liberalism. Section I will fit some of my conclusions within the overall disaggregation approach that Cecile Laborde has

recently advocated for handling controversies about religion and liberalism. Section II will articulate what I take to be the spine of the argument: that it might be impossible to draw a clear-cut distinction between facts and values for the purposes of political treatment. I aim to argue that factual controversies should be subjected to the same standards of public justification as moral disagreements. Section III explores Rawls' acknowledgement that political norms and institutions *will* affect the diversity of views and beliefs available in pluralistic societies. Section IV explores to what extent such liberal spill-over is expected to happen over religious doctrines once science is politically elevated in its epistemic role. Finally, section V interrogates whether we are still within the boundaries of political liberalism or whether my claims have already migrated into a more robustly rationalistic notion of liberalism. I conclude by defending that my formulation fits within the normative requirement of political liberalism, insofar as its core remains a propulsion to show all citizens equal respect through the laborious construction of public justifications.

1. **The Disaggregation Approach.**

In recent years, the French political theorist Cecile Laborde (2017) has questioned whether religion can be analysed as a single category for the purposes of assessing to what extent its presence in public life poses a challenge to liberalism's alleged commitment to secularism. Her broad answer is that not every religious expression in the public sphere constitutes a relevant violation of the liberal secular core, so there can be a variety of institutional arrangements that allow some room for religion without betraying this minimal core. Thus, Laborde argues that only some religious features are thereupon problematic. These figures are the ones that put fundamental liberal ideals in danger, such as the need for public justification, civic inclusiveness, the notion of a limited state and a commitment to democratic values. For the purposes of this research, the first feature is the relevant one.

The liberal state, Laborde argues, is the justifiable state. This means that state officials should justify their actions by appealing to public reasons, which means accessible reasons. Importantly, Laborde warns that it is not only religious ideas that are inaccessible but that non-religious ideas can also be inaccessible. It is also not the case that all claims of a religious nature are inaccessible, she adds. How does this all tie in with our case at hand?

Dworkin and others have argued that insofar as creationism reveals a religious motivation, liberals should deny its entry to the school curriculum. Instead, I have not treated creationism as a specifically religious claim, but as a factual claim that can be considered scientific in virtue of its *content* and perhaps even in virtue of its *defense*. The problem with ID and CS, we have argued, is that they are weak or very weak scientific theories. Accordingly, the adjudicatory engines of political liberalism rule them out because of their lack of explanatory proficiency and not because they invoke supernatural causation. To the extent that they put forward hypotheses that can be understood in scientific terms -as most ID theorists indeed do- these claims are not inaccessible. Thus presented, there is nothing *religious* in creationism that makes it a threat to the justifiable state. The fact that the overwhelming majority of its supporters are religious believers does not constitute a reason for liberals to dismiss creationism.

However, liberals take SEB as a valid adjudicatory procedure, as it is neutral in the relevant sense. Here, the real challenge is posed by the kind of TS that Plantinga advocates. Again, the problem with TS is not that it is religious *per se*. The problem is that TS is epistemically inaccessible in a domain in which we already have an epistemically accessible base to adjudicate factual claims. The former is non-public whereas the latter is public and thus suitable for justification. Plantinga's TS claims for the accommodation of inaccessible sources -things that Christians *know* just because they have a prior commitment to the Christian doctrine- and therefore rejects public adjudicatory modes.

Therefore, creationism as such does not represent a problematic religious claim before liberalism's eyes. Against Laborde's framework, if ID gains scientific respectability tomorrow, it might merit being included in the biology curriculum without violating the minimal secular core, to the extent that it would have been included because of its epistemic accessibility. Thus, I have treated creationism as a scientific claim that can be duly processed by the corresponding adjudicatory filters. If it is to be dismissed, it is because it falls short of epistemic desideratum. TS, instead, stands for a religious reason that is problematic for liberalism in the sense that it appeals to inaccessible grounds. In this regard, the accommodation claim made by Plantinga is problematically religious because it asks for an exemption from evidential (public) standards in favour of non-universally accessible modes of cognition. This is consistent with Laborde's disaggregation approach, to the extent that it locates the requirement in accessible justification and not in the religious nature of the hypothesis.

2. The Continuity of Public Justification.

Rawls' theory is premised on the distinction between a political conception and the comprehensive doctrines that inhabit the pluralistic landscape of contemporary societies. In this sense, it is said that his political liberalism relies on a *discontinuity* strategy: the political does not necessarily arise from any comprehensive view but it is freestanding. Against this strategy, Ronald Dworkin (2000) has argued for a thesis that establishes *continuity* between political morality and personal ethics. In short, Dworkin believes that the principles of a liberal polity should be grounded upon a distinctive ethical view, which does not eschew the question of the good life. I will not review this debate here.¹ Instead, I will propose an alternative way to challenge Rawls' discontinuity strategy.

As I have argued in the introduction, political liberalism is said to be neutral towards comprehensive doctrines as primarily moral views. Most political theorists of a Rawlsian cast of kind assume that there is no such duty towards competing factual claims. I believe that the crucial reason for this is because moral claims involve normative commands and factual claims do not tell us how to live. In this sense, political liberals are a tributary of Hume's Law.

The idea that has been implicit throughout this work is that there is a sort of *continuity* between these two dimensions. Factual statements and moral judgements are sometimes deeply connected, as reviewed in Chapter III. If so, factual disagreements are not immunized from the rules of public justification. The reader might have developed the idea that this is exactly what I was doing by defending the epistemic privilege of science within public reason. This was also Hannah Arendt's concern: the claim that factual truths should be peremptorily acknowledged as such, thus precluding political debate. But the underlying intuition of my argument is the opposite. Factual claims are relevant to many people. Moreover, they are often linked to metaphysical beliefs and moral views. Hence, they should be dealt with the same justificatory standards that political liberalism applies in other domains. Arendtian fears are thus unfounded. Much to the contrary, I have rejected the idea that factual truth-propositions and comprehensive beliefs are essentially discontinuous. They might even

¹ For illuminating discussions about the merit of Dworkin's views against the Rawlsian *discontinuity* model, see Neal, 1997; Arneson, 2004; Lecce, 2008.

belong to the same realm, as Arendt believed regarding facts and opinions. The fundamental difference between them was already stated: a highly reliable mode of inquiry reigns over the domain of factuality. Factual disagreements can be arbitrated in a less controversial way than moral disagreements. For the former, we have science. For the latter, we have not yet found such an incontestable methodology. In other words, factual disagreements have a special way of adjudication that is designed to avoid arbitrariness and it usually provides us with trustworthy outcomes.²

In consequence, the fact that ideal scientific reasoning conforms to political liberalism's preferred guidelines of inquiry does not amount to immunization from politics. In the Rawlsian parlance, the scientific is indeed *political* because it belongs to the citizen's shared ways of reasoning. Most of the justificatory work then, should be done to grant science its epistemic adjudicatory entitlement. Once this has been done, victorious factual claims enter the political module due to their special public character. As the political -as opposed to the comprehensive- is the only legitimate source for coercion in pluralistic societies, science *qua* political can legitimately constrain the actions and preferences of citizens in the public sphere, which includes some decisions over the content of public education. In most cases, however, science alone does not work. Science tells us that vaccination is safe and efficient in controlling epidemics, but we also need an ethical judgment telling us that the state can decide for the children in cases where the parents refuse vaccinations. Both public reasons work together to justify a program of mandatory vaccination under liberal rules.

As described, science becomes *political* not in the sense of being itself a battlefield between ideologically-fuelled parties, but in the Rawlsian sense of serving as a justificatory ground for the legitimate exercise of power -although many times coupled with other normative reasons. Therefore, not all factual beliefs are equal in the tribunal of political liberalism. Those with scientific support will be preferred. This is not an abdication from neutrality, since it is a neutral preference in the relevant sense. Thus, to the opening question whether political liberalism ought to remain neutral to factual claims beyond moral ones, the answer that this

² I do not think that Arendt would have disagreed with this. To Arendt, "facts inform opinions, and opinions, inspired by different interests and passions, can differ widely and still be legitimate as long as they respect factual truth. Freedom of opinion is a farce unless factual information is guaranteed and the facts themselves are not in dispute. In other words, factual truth informs political thought just as rational truth informs philosophical speculation" (2006: 238). The validity of opinions, therefore, depended on having the facts right. But how to get the facts right? Scientific verification seems like a good place to start. Arendt was specifically preoccupied with historical sciences, and the democratic danger posed by deniers of the past, such as Holocaust deniers. This is the plot of the recent film *Denial* (2016), directed by Mick Jackson. As it were, factual truths appear to be fundamental in Arendtian politics.

thesis provides is affirmative. There are no good reasons to exclude factual disagreements from the justificatory duties of political liberalism. This entails that the exercise of political power is to be justified to people holding not only moral conflicting views but also factual discrepant beliefs. It is in this specific sense that I claim there is a continuity between both domains. Therefore, even if the factual realm features a more rigorous and impartial adjudicatory mechanism (i.e. science), the liberal obligation to provide a public justification remains. Once the duties of justification have been fulfilled, political liberalism can legitimately limit the scope of both moral and non-moral claims advanced on purely comprehensive grounds.

This is hardly news: if a given faith-based congregation aims to teach children that same-sex relations should not be tolerated since they are sinful, political liberalism can rightfully exclude such views from compulsory schooling. Regardless of their parents' beliefs, children from these orthodox religious families will be subjected to an education that aims to pass the fundamentals of a liberal political morality -a *thin* conception of the good, as some theorists like to characterize it- which in this case will include notions of respect for diverse sexual orientations. The same is true with SCR. These factual claims, which are linked with overall theological narratives and perhaps even play a foundational role on other crucial moral claims, are to be treated with the same justificatory standards with which liberalism treats comprehensive disagreements in the sensitive curriculum debates.

Finally, it might be insisted that moral and epistemological claims should be treated differently. According to this position, the liberal commitment to neutrality relates to ethical or normative claims and is not about epistemological claims such as scientific ones. As articulated by Harry Brighouse, epistemological claims -especially empirical ones- can be decided, promoted or rejected outside the constraints of liberal justification.³ This idea seems to be confirmed if we pay attention to the sort of debates that capture the attention of political theorists and philosophers of education. Most of the time, these discussions are centered on whether the mandatory curriculum should remain neutral or otherwise become

³ According to Brighouse, "Neutrality does not prohibit sincere appeal to controversial empirical premises; it prohibits only appeal to controversial moral claims. . . . Neutrality's appeal rests partly on the intimate connection between persons and their conceptions of the good. This intimacy, partly consequent on the view that individuals are morally responsible for working out and living by a set of true moral precepts, supports persons' feelings that they are being shown disrespect when justifications of coercive action undertaken either against them or on their behalf presume their moral views false. The same intimacy is not present in the case of empirical beliefs. While significant revision of our moral beliefs supports revision of our identities, this is not true of our empirical beliefs, especially abstract beliefs such as epistemological beliefs" (1998: 738).

perfectionist regarding controversial moral views. Conversely, as Brighouse's argues, no neutral treatment is required between controversial empirical assertions.

I cannot follow Brighouse here. As we have showed, some moral claims rest on certain facts about the world. The Christian belief in resurrection is not a metaphorical figure but a factual claim about a historical event that allegedly took place roughly two thousand years ago in a Middle Eastern city. It asserts that a Nazareth carpenter named Jesus was physically dead for a couple of days after a painful torture and then literally rose from his tomb. To this narrative, resurrection is the ultimate triumph against death: only after Jesus's loving sacrifice were we entitled to an eternal afterlife. Without such a factual claim, the religious message of hope and redemption is fatally truncated. There are myriad of cases like this.⁴ The creation vs. evolution debate is a paradigmatic example of continuity: creationists appear to believe that if their factual narrative is false, their moral framework consequently crumbles. Even if I did not make a strong claim that Darwinism leads to atheism, but a weak one that Darwinism makes one *more likely* to be an atheist, the adjudication of this factual disagreement has implications on a more comprehensive level.⁵ Therefore, there is no simple way of disentangling some beliefs from their broader empirical foundations in the comprehensive picture. After all, liberalism is supposed to be neutral to comprehensive doctrines and comprehensive doctrines include epistemological and factual views.

I do not ignore that many people operate with a clear fact - value distinction in place. Nothing that natural sciences could tell them will affect their moral views. This is especially true for political theorists, sociologists and cultural anthropologists.⁶ However, as reviewed, other people do not see the factual and the ethical as impervious enclosures. Some respectable theological traditions make factual claims that are inseparable from their overall doctrine.

⁴ Tim Fowler rightly notes that "even seemingly empirical subjects such as science or geography are intimately bound up with wider questions of metaphysics and theology... these connections make it difficult for political liberals to distinguish mad or crazy views from the permissible range of comprehensive doctrines" (2010: 376).

⁵ This is the precise idea that Elizabeth Anderson had after visiting the Creationist Museum in Kentucky: "the fundamental religious objection to the theory of evolution is not scientific but moral... It must be opposed because it leads to rampant immorality on both the personal and the political scales" (2007: 301).

⁶ Researchers George Perry and Ruth Mace have found a strong correlation between studying social sciences and rejection of evolutionary approaches to human behavior. In particular, they argue that social scientists tend to commit the naturalistic fallacy in reverse: "what is politically bad must also be bad science... what *ought not* cannot be identified as what naturally *is*" (2010: 110). Regarding moral and political philosophers, I agree with Galston's critical observation in the sense that "most contemporary social philosophy proceeds as if it were totally autonomous from... the developments in the natural sciences" (1991: 37).

For them, much is at stake if disagreements in the domain of factual reality are (politically) adjudicated by way of science.

3. The Spill-Over Effect.

Once we have agreed that scientific methods and conclusions provide public reasons and therefore are suitable for political justification, questions are raised concerning the consequences for the cultural landscape. This is indeed the creationist concern: certain crucial institutions for the socialization of knowledge will adopt a scientific standpoint that can be detrimental to their overall cultural project. Even if such standpoint is politically justified -as I believe it is- its distinctive effects will be felt at a comprehensive level. To put it concretely, by entrusting science a privileged epistemic status as paradigmatic public reasoning, political liberalism is compelling theistic worldviews to revise their factual assertions and explanatory claims about the character of cosmic realities, at least when it comes to advance those assertions and claims in public forums. This is still a different kind of continuity. The previous section explored factual beliefs attached to comprehensive views, and thus was concerned with the difficulty of disentangling scientific claims from ethical statements for the purposes of public justification. This section is about the spill-over that occurs *from* the political *to* the comprehensive.

Again: not all theistic worldviews will be equally pressed. Coming back to Kitcher's distinction between a *belief* model and an *orientation* model of religious life laid out in Chapter III, the liberal preference for an evidence-based epistemology is mostly problematic for the former. Insofar as *orientation* models do not include robust factual beliefs, they remain relatively untouched by the justificatory pedigree of secular science. *Belief* models, on the other hand, cling to narratives which contain non-trivial truth-propositions with respect to certain spatio-temporal realities. Creation stories are a paradigmatic example. Life in societies driven by scientific discoveries and technological change will be arguably more difficult for the believer who has not renounced seeing their divinities operating throughout nature than for the sophisticated believer who lives their religiosity as a rather nominal experience. This was indeed John Dewey's prophecy: the emergence of a new type of religiosity that gives away supernaturalism and retains only its moral core. Dewey called it "the emancipation of the religious from religion" (1934: 27), where the *religious* is the ethical sentiment that is worth

pursuing and *religion* is the traditional appeal to an active deity who merges its metaphysicality with the physicality of the world.⁷

To be sure, political liberalism is not discouraging *belief* models of religiosity across the broad background culture, it is rather disputing and ultimately epistemically invalidating, some of its propositions through its public institutions. Compulsory educational systems are a case in point. Here, it might be observed that political liberalism is therefore confining religious faith to a moral philosophy, much like in Gould's NOMA spirit -which we explicitly discarded in Chapter III. However, this would be a misguided objection. Political liberalism is not demarcating how religions should be in order to deserve the name. Much to the contrary, it acknowledges that most theistic traditions have both a "value-part" and a "science-part" - following Dworkin's nomenclature. Thus, the liberal state lacks the legitimacy to command Christianity or Islam to abandon their factual claims. The only thing that political liberals can argue is that, when adjudications are needed, factual disagreements will be assessed through an epistemic process with public reach.

In the case at hand, the spill-over *from* the political *to* the comprehensive is triggered at two levels. At the substantive level, children from creationist families will learn that Darwinian evolution is true when it comes to explaining life on Earth. At the epistemic level, they will learn that factual beliefs should be supported by evidence-based methods. According to the substantive spill-over, people from diverse cultural backgrounds and prior metaphysical commitments should all understand biological life in basic evolutionary terms. According to the epistemic spill-over, people from diverse cultural backgrounds and prior metaphysical commitments should value evidence-based methods to justify factual beliefs.

It is important to distinguish these two levels. Recall that ID might be correct and new evidence pointing to an overarching designer could be revealed. In such a case, the

⁷ Dewey believed that science had been the game-changer. In his words, "the impact of astronomy not merely upon the older cosmogony of religion but upon elements of creeds dealing with historical events -witness the idea of ascent to heaven- is familiar. Geological discoveries have displaced creation myths which once bulked large. Biology has revolutionized conceptions of soul and mind which once occupied a central place in religious beliefs and ideas, and this science has made a profound impression upon ideas of sin, redemption and immortality. Anthropology, history and literary criticism have furnished a radically different version of the historic events and personages upon which Christian religions have built. Psychology is already opening to us natural explanations of phenomena so extraordinary that once their supernatural origin as, so to say, the natural explanation.... *New methods of inquiry and research have become for the educated man today the final arbiter of all questions of fact*, existence, and intellectual assent. Nothing less than a revolution in the 'seat of intellectual authority has taken place'... The mind of man has been habituated to a new method and ideal: There is but one sure road of access to truth -the road of patient, cooperative inquiry operating by means of observation, experiment, record and controlled reflection" (Dewey, 1934: 31-32) *Italics are mine.*

substantive spill-over would be different, as people from diverse cultural backgrounds and prior metaphysical commitments should then understand biological life in basic teleological terms. Liberal predilection for SEB is a risky one, to the extent that we are bound to its conclusions. The philosophical implications of Darwinism are not merely a threat to theistic worldviews but also to liberal humanism. In the last few decades, life sciences have advanced controversial theories about consciousness, the self and free will. Some of these theories stand in opposition to the factual premises of liberalism. If this is the case, the substantive spill-over that is expected to happen *from* the political *to* the comprehensive, via the inclusion of science in the political, is a matter of concern for liberals beyond the evolution vs. creationism debate.⁸

As it were, if the intra-scientific consensus has guaranteed access into the political module, and the political is expected to overflow into the cultural landscape, then the intra-scientific consensus will shape the range of available factual beliefs in this cultural landscape. What should political liberals think about this spill-over? Famously, Rawls argued that we should accept this spill-over with a spirit of regret. Acknowledging that some conceptions of the good life will die out in a liberal constitutional regime, Rawls goes on to argue that:

“Without further explanation, it would not appear to be unfair to them, for social influences favouring some doctrines over others cannot be avoided by any view of political justice. No society can include within itself all forms of life. We may indeed *lament* the limited space, as it were, of social worlds, and of ours in particular; and we may *regret* some of the inevitable effects of our culture and social structure. As Berlin has long maintained, there is no social world without *loss*: that is, no social world that does not exclude some ways of life that realize certain fundamental

⁸ This is Y. N. Harari’s grand thesis in *Homo Deus*: liberal ideas will be increasingly threatened by future scientific revolutions not only fueled by technological advances but chiefly by biological insights. Liberalism, Harari reminds us, depends on our belief in individuals with a capacity for freedom. But life sciences are suggesting that we are basically an assembly of biochemical algorithms. Of course, in the same way that Christianity did not disappear the day Darwin published *On the Origin of Species*, Harari acknowledges that liberalism will not vanish because scientists have reached the conclusion that there are no free individuals. Even staunch “champions of the scientific word”, such as Richard Dawkins and Steve Pinker, refuse to abandon liberalism. After extenuating and erudite work to deconstructing the self and the freedom of the will, Harari accuses them of “perform breathtaking intellectual somersaults that miraculously land them back in the eighteenth-century, as if all the amazing discoveries of evolutionary biology and brain science have absolutely no bearing on the ethical and political ideas of Locke, Rousseau and Thomas Jefferson” (2016: 305).

values... But these social necessities are not to be taken for arbitrary bias or injustice” (2005: 197) *Italics are mine*.

Furthermore, Rawls specifically acknowledged that the political requirements of children’s education will have “unavoidable consequences” to diverse worldviews, especially non-liberal ones, and again, that this feature “may have to be accepted, often with regret” (2005: 200). Most probably, Rawls did not have scientific spill-over in mind. He might have wholeheartedly agreed with Dewey that “new methods of inquiry and reflection have become for the educated man today the final arbiter of all questions of fact” but he could not have celebrated the gradual extinction of natural theologies as such. In fact, he seems to consider that Dewey’s prophecy just anticipates a social loss.

However, this general feeling of remorse is hard to sustain against some liberal principles. There is little regret in the progressive reduction of homophobia through education, even if this means a blow to diversity. In the same way, there is no significant loss to regret if deeply theistic families have trouble passing their creationist beliefs to their offspring due to the application of public standards of reasoning. If science is indeed a politically legitimate filter to describe and explain factual reality, and the application of such an epistemic system entails that some cosmic narratives will be affected and eventually forced to rethink some of their factual beliefs, then we should not be regretful about this feature. In the case of creationist communities, children will be raised in a political society that recognizes the persuasive power of Darwinian explanations to account for biodiversity. In this scenario, creationism as a doctrine will fail to gain adherents over time. But it seems a small price that political liberals should be willing to pay in exchange for a method that mirrors the values of public reason.

This discussion fits within a general question in liberal political theory: to what extent political liberalism can legitimately permeate comprehensive doctrines with substantive liberal values. Some authors such as Macedo have argued for a project of transformative liberalism, in which certain liberal values should not only be allowed, but encouraged to overflow, *from* the political *to* the comprehensive. As reviewed in Chapter VI, he is adamant about the importance for competing non-political doctrines to absorb liberal civic values. I have not necessarily endorsed such a version of aggressive liberalism. My own claim is that the transformative character of liberalism is remorseless if it means to permeate the cultural landscape with common modes of thought. Rawls would not have opposed this conclusion, since he was aiming at a conception of objectivity for which the establishment of a public framework of thought was crucial. This framework of thought and judgment served as open

and public basis for justification for citizens as free and equal, to be applied in all kinds of inquiry, whether moral, political, scientific, or matters of common sense (Rawls, 2005: 110, 115). Accordingly, there is nothing to regret if political liberalism *nudges* certain religious traditions to remain open to revise their factual beliefs in light of new scientific discoveries. By endorsing evidence-based factual claims, it is sending a message about the kinds of reasons that show equal respect to all citizens regardless of their cultural backgrounds. Therefore, there is nothing to regret about the spill-over of what we might call evidence-based liberalism.

4. The Idea of a Liberal Religion.

According to the last section, some theological discourses will adapt to the epistemic conditions set by political liberalism when it comes to arbitrate factual disagreements. Other religious traditions will struggle with these requirements by sticking to their own epistemological criteria. I propose that we extend the formula ‘liberal religion’ to describe the former. In political philosophy, at least, there is no conceptual clarity about what a liberal religion means. The *liberalness* of a set of religious beliefs might refer to different things.⁹

Rawls himself gave some clues. Proposing a revised edition of *Political Liberalism*, he wrote a letter to his editor stating that the major religions of the world (Catholicism, Protestantism, Judaism and Islam, in their non-fundamentalist versions) were compatible with a constitutional democratic regime, at the same affirming that they “are not themselves liberals [because they] are based on the authority of the church and sacred text” (Rawls, 2005: 438). Conversely, to Rawls’ eyes, an internally liberal religion should do away with both hierarchical forms of authority, hence embracing a sort of democratic organization and scriptural veneration, and thus submitting to alternative or complementary sources to *know* the will of God. These are not however, exhaustive possibilities nor systematic categories. To my mind, the liberalness of a religion might be assessed against different liberal values, as follows:

- i) Liberal religion as normatively minimalistic, thus leaving considerable space for individual (negative) freedom. Think about Zen Buddhism, which lacks a formal set of stringent rules and everyday religious duties like Sharia law for Muslims.

⁹ This was the topic of my 2011 Master’s dissertation, entitled: *Is there such a thing as a liberal religion?*

- ii) Liberal religion as autonomy-respecting, thus encouraging personal exploration of the faith and refusing to submit to the top-down interpretation of clerical figures. Think about the origins of Protestantism and the rather revolutionary right to read the Bible without the mediation a priest.
- iii) Liberal religion as inclusive, advocating a message of universal salvation and avoiding particularistic claims about chosen or predestined people. Against this criterion, Jehovah's Witnesses are not liberal, since they believe that exactly 144.000 individuals will enter the kingdom of God.
- iv) Liberal religion as egalitarian, thus embodying certain principles of equality, such as gender equality in clerical positions or even rules of horizontality between parishioners and the clergy. Against this egalitarian benchmark, Catholicism will not qualify as liberal but Anglicanism could.
- v) Liberal religion as pluralistic, thus celebrating the theological diversity that is obtained once there is agreement that ultimate truths are not readily available in just one tradition, but they are scattered and distributed across different religious experiences and testimonies to be shared and integrated.
- vi) Finally, liberal religion as open to progress in a theological sense. Here, the believer understands revelation as ongoing and not as sealed in ancient sources. Its key concepts are change, adaptability and self-criticism. Hence, it is often portrayed as progressive or reformist religion in opposition to orthodox or conservative religion.

This last meaning appears to capture the most common usage of the 'liberal' label within philosophy of religion. The paradigmatic example to this respect is Unitarian Universalism (UU). Contemporary UU proudly claims liberal values while professing a rather pluralistic faith. James Luther Adams, arguably its most influential theologian, understood liberalism as implying a critical attitude towards the status quo as well as the search for new alternatives for human development. Adams praised liberal ideals for making modern humanity "aware of the inevitability of change, of the necessity to be critical of the past and present, and of the possibilities of the future" (1976: 11). He laid out the core coordinates of the UU, whose first statement reaffirms the idea that revelation is continuous. "Meaning has not been finally

captured”, Adams asserts, “nothing is complete and thus nothing is exempt from criticism” (1976: 12). In this theological reading, foundational texts are not the last word. The divine expresses itself through humanity’s transit on earth. This requires a spirit of openness to new scientific insights, which in turn might lead to the reformulation of some theological views. Like in the case of science, the truths of a liberal religion are provisional too. As the Commission on Appraisal of the Unitarian Universalist Association puts it to epitomize their religious distinctiveness: “We don’t stand. We move” (CAUUA, 2005: 17).

The point of this seeming digression is to show that certain religious groups seem to be better equipped to handle the spill-over that is produced *from* the political *to* the comprehensive in the discussed sense. If a liberal religion is ultimately a set of open-to-change beliefs, and scientific pronouncements invite us to challenge prior assumptions because of their epistemic plausibility, then a liberal religion is one that is ready to adapt itself to scientific insights. Conversely, illiberal religions will fight these pronouncements because they find this adaptation hard to realize. At some point, they will insist that they possess exclusive epistemological resources, which are non-justifiable to all. Creationist groups constitute an example of this. Of course, as Rawls indicates, an illiberal religion is not necessarily a problem within the ecumenic framework of political liberalism, which assumes the fact of reasonable pluralism. Internally liberal and internally illiberal religions are equally welcomed insofar as they are compatible with a constitutional liberal regime. My claim is of a different sort: as political liberalism endorses evidence-based methods in the public sphere, it pushes religious traditions into evidence-based epistemologies. In this sense, political liberalism is impenitently transformative. If the institutions of political liberalism are constantly shaping the scope of pluralism, then the pressure exerted over religious denominations and theological discourses is for them to become more liberal in the progressive sense, which entails attentiveness to science’s findings. Then, religious traditions that abide by the liberal preferred epistemology will be more (internally) liberal than those that refuse to do it. Therein the paradox outlined by Žižek in Chapter III: fundamentalist sects are usually less willing to accept the conclusions of science, so they claim to be scientific themselves in order to provide an alternative reading of factual reality. Conversely, religious denominations that are less prone to issue truth-propositions about factual reality and cosmic history are to be regarded as liberals. This is not because they are indifferent to such truths, but because they recognize in science a valid epistemological procedure to determine factual reality in a way that is compatible with a progressive theology.

This is not just a theoretical spill-over *from* the political *to* the comprehensive: it has been occurring in the last centuries since the advent of modern science, somewhere between Tycho Brahe watching a nova and Newton writing the *Opticks*. Here, the only possible regret is of a Millian kind. It goes as follows: in the transition from religion as fully-explanatory project to religion as focused in the sole “value-part”, we might miss the truth encrypted in its “science-part”. After all, illiberal religions could be right and political liberalism can never dismiss such a possibility. But beyond such regret, there are no good reasons for a nostalgic remembrance of a world in which religious authorities determined the contours of factual knowledge. The revolution in the seat of intellectual authority that Dewey praises should be also be praised by political liberals in a very specific sense: that seat is now taken by a public epistemology, suitable for a justificatory project.

5. Is this still Political Liberalism?

At this final point, some might argue that this is just too much to ask for a purely political version of liberalism, or that I am abandoning political liberalism for a more robustly rationalistic project. After all, my claim is that citizens in the political sphere should abide by certain norms of reasoning, thus suggesting that the Rawlsian notion of political reasonableness should be supplemented with some epistemic requirements.

This is not necessarily an accusation. Following Gerald Gaus, it can be argued that political liberalism in its Rawlsian version fails to provide a definitive account of public justification by refusing to adopt serious epistemological commitments. Thus, Gaus argues, we should switch political liberalism for a more epistemically robust justificatory liberalism. In many respects, Gaus’ account is compatible with mine. Specially, Gaus disputes what he calls “justificatory populism” (1996), namely the notion that public reasons are those that obtain popular acceptance or wide consensus. Instead, he proposes to adopt a justificatory criterion that is independent of actual acceptance. This is roughly what I have defended here, specifically by dismissing the idea that only uncontroversial scientific conclusions are to be regarded as public reasons. As I have argued, Darwinian evolution might be still controversial in some milieus, yet it counts as a publicly justified belief. I have nevertheless added that the methods that produced Darwinism must reflect a wide intersubjective agreement over their epistemic fairness, which I believe is the case of most evidence-based scientific reasoning.

Furthermore, Gaus' assault on political liberalism focuses on its preference for commonsensical methods of justification, which are usually flawed. I have not contested this. However, such criticism loses its teeth against my understanding of scientific reasoning as the filtered version of common sense.¹⁰ Therefore, while retaining Rawls' ultimate commitment with commonsensical reasoning as the basis for public reasoning, thus staying within the tradition of political liberalism, I have presented a refined version of commonsensical reasoning, immunizing my argument from Gaus' criticism.

As it were, the question remains. If political liberalism is necessarily tied to populist consensualism, then I have not been defending strict political liberalism here. However, I have operated with a different idea of political liberalism in mind, which is a version of political liberalism that can stand for a preferred epistemology because this provides publicly justified beliefs about factual reality, regardless of actual acceptance. This is a very *thin* epistemological commitment, but an epistemological commitment all the same. I believe that such a preference for an evidence-based epistemology when it comes to adjudicating on factual disagreements is not incompatible with the essential project of political liberalism. In my reading, this is a project of reciprocal justification: all citizens are entitled to accessible reasons when it comes to justifying the coercive power of the state. Such a project can sometimes take minimalistic forms, as in the version that classical liberals defend, or lend support to an enlarged share of legitimate action, as in the version that liberal egalitarians advocate. In both cases, what is crucial is that we can provide public justifications in societies where a plurality of worldviews and ultimate beliefs coexist. At the very least, that is the project's expectation. It is where its normative appeal lies.

The conclusion of this research is that this project of justification depends on shared standards of reasoning. This echoes Rawls' early intuitions about the possibilities of grounding philosophical theorizing on a rigorous and systematic method like the scientific. To put it another way, Rawls envied science's claim to objective knowledge. Accordingly, he highlighted the value of objectivity by assigning it a stellar role when constructing the political conception. The reason behind this preference for objectivity is not epistemic perfectionism, one concerned with ontological or metaphysical truths, but equal respect. This is an idea that

¹⁰ Gaus seems to concede the point. Although he does not refer to scientific reasoning, he argues that an epistemical norm of "refined common sense" would render his critique inofficious since "we have abandoned the reasonable people thesis for a stronger normative theory of justification". This occurs when "the claim is that valid inferential norms are those that reasonable people would accept *if they appreciated their errors*" (Gaus, 1996: 134), which is precisely what bias-controlling scientific reasoning aims to do.

stands out in the work of most if not all political liberals: the way to show equal respect is expressed in the political effort to reach wide intersubjective agreement, whether in the moral or the factual domain. Thence, the effort to make coercion-grounding arguments epistemically accessible. Political liberalism takes careful pains to provide a framework of legitimate adjudication for all parties holding competing claims. Evidence-based epistemologies, such as SEB, thus become politically relevant to the extent that they can sustain such a framework.

This has indeed been the spirit of my research. Throughout these pages, I have made a serious and detailed attempt to justify the teaching of Darwinian evolution to the creationist. For many political theorists, this is a no-brainer. Some are quick to discard creationist claims because they are simply wrong, thus failing to appreciate the political problem that arises with the philosophical ramifications of Darwinian evolution and the unaccounted epistemic standard that we use to declare that creationism is wrong. Others accept that this constitutes a democratic challenge and go on to argue that perhaps we should allow creationist families a series of accommodations regarding the school curriculum. I have not taken any of these positions. Instead, I have argued that whilst the challenge is real and serious for political liberal, the latter has the internal resources to reject it. Creationism might be dead-wrong in all their supernaturalistic hypotheses and truth-propositions, but the way in which we respond the CC, or any other SCR, reveals how consistent our commitment with public justification is. Therefore, I have insisted that factual disagreements are disagreements that should be dealt with within the framework of political liberalism too.

For political liberalism, the political is the architecture of what is shared. We only attain public justification from a common perspective. Scientific reasoning, to the extent that it can be presented as an evidence-based epistemology, provides such as perspective. In this sense, I have offered a pre-political assumption to house the ultimate defense of scientific reasoning as a shared way of reasoning: the standpoint of a NE. It is an assumption that should be made for my argument to be wholly coherent and persuasive. It is, I think, the crucial assumption that allows me to justify the epistemic status of scientific knowledge in political conversation and remain loyal to the principles of political liberalism.

All in all, in the same way that many Rawlsian philosophers recognize that even political liberalism displays a *thin* conception of the good and remains political all the same, my version of political liberalism will include a *thin* epistemological commitment in the Quinean sense. Accordingly, this should not be thought of as an extra requirement of epistemic

reasonableness on top of political reasonableness. Rather, the very basic epistemic capacity that I am describing must be included in the notion of political reasonableness. The idea, in a nutshell, is that reasonable citizens abide by the evidence (because they have a predisposition to do so). This is not a very strong presumption neither from a naturalistic nor a religious perspective. Rawls argues that the political conception “offers no specific metaphysical or epistemological doctrine beyond what is implied by the political conception itself” (2005: 10). I argue that this *thin* epistemological commitment is already implied by the political conception itself. Rawls believed that politically reasonable citizens should acknowledge the burdens of judgment, some of which refer to the fact of cultural cognition and the all-too-common tendency to confirmation biases. But his burdens of judgments say nothing about citizens ignoring or disparaging the role of evidence, instead he only remarks upon how differently they might ponder it. However, once we have in place a systematic and trustworthy method of weighing conflicting evidence in conditions of impartiality and relative isolation of cultural biases, it follows that we assign such a method a leading role in the public justificatory framework. Science acquires political importance because, and not despite, the burdens of the judgment. Thus, citizens *qua* citizens are politically reasonable when they are willing to accept the legitimacy of scientific reasoning as the filtered expression of their own epistemic capacities.

To what extent this *thin* epistemological commitment leads us to rethink other areas of political liberalism is open to further discussion. Some might still highlight the similarities between the types of evidence-based liberalism that I have defended here with the kind of Enlightenment liberalism that Rawls wanted to overcome. After all, science is the overconfident scion of the modern rationalistic dream. But on the other hand, it is worth noting that even in my version of political liberalism, science plays a privileged but also limited role within the framework of public justification. Ordinary citizens are not encouraged to apply scientific reasoning as a way of self-realization. Political liberalism is not promoting scientific knowledge as a means to substantive freedom, let alone forcing people *to be free* in that sense. The duty to abide by the evidence does not fall onto citizens *qua* individuals beyond the political. In the case of the evolution vs. creation debate, political liberalism is asserting the scientific truth of Darwinism, but if someone’s religion says otherwise, this view should be respected provided that this person is prepared to accept that the public institutions that embody the political conception will take Darwinian evolution to be true. Creationists might suffer the spill-over that this official endorsement triggers, but they do not bear the political duty to revise their factual beliefs in light of the evidence in

their non-public life. People have the right to think that their own beliefs are warranted, even if they are not accorded with a scientific epistemology. Instead, what political liberalism affirms is that the scientific epistemic baseline is enough to ground public justification. As such, it is enough to reject the CC.

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