



Contemporary Darwinism as a worldview

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ARTICLE INFO

Keywords:

Darwinism
Worldview
Intelligent design
Methodological naturalism
Surface reading
Science communication
Richard dawkins
Daniel dennett

ABSTRACT

The most public-facing forms of contemporary Darwinism happily promote its worldview ambitions. Popular works, by the likes of Richard Dawkins, deflect associations with eugenics and social Darwinism, but also extend the reach of Darwinism beyond biology into social policy, politics, and ethics. Critics of the enterprise fall into two categories. Advocates of Intelligent Design and secular philosophers (like Mary Midgley and Thomas Nagel) recognise it as a worldview and argue against its implications. Scholars in the rhetoric of science or science communication, however, typically take the view that Darwinism isn't a worldview, but a scientific theory, which has been improperly embellished by some; they uphold the distinction between is and ought and argue that science is restricted to the former. This prompts an is–ought problem on another level. I catalogue the ways in which Darwinism plainly *is* a worldview and why commentators' beliefs that it *ought* not to be distorts their analysis. Hence, it is their own worldview that precludes them from accepting Darwinism's worldview implications.

1. Introduction

I want to persuade the reader, not just that the Darwinian world-view *happens* to be true, but that it is the only known theory that *could*, in principle, solve the mystery of our existence. (Dawkins, 1986, xiv)

Darwinism has always presented a greater challenge to human concerns than other marquee scientific theories. Compare quantum physics or plate tectonics. Disruptive, certainly, but neither tends to feature in fiery public debates, angry sermons, or legal cases. The theory of evolution, however, still exercises passionate commentary on all sides. And while quantum physics, say, has undoubtedly vast implications for technology and basic science, its defenders are rarely accused of propagating a value-laden worldview or ideology. Not so with Darwinism. Indeed, the most prominent Darwinians — like Jerry Coyne, Richard Dawkins, and Daniel Dennett — are candid in their worldview ambitions. Their interlocutors in the intelligent design (ID) movement, meanwhile, highlight precisely this ambition (to explain more than just biology) as the main sin of contemporary Darwinism. And yet this feature of the debate has generally escaped the scholarly attention of those working in the rhetoric of science and science communication. This is not to say the commentators are unaware of it; rather, they have assumed there are deeper or hidden aspects of the debate more worthy of analysis and that the participants' own framings are unreliable. I argue that a less suspicious reading of texts from both sides of the debate shows that there is

less dastardly rhetoric than some commentators imagine and that mainstream Darwinism clearly is a broader worldview with virtually no effort made to hide the fact.

Some scholars of science communication object, claiming that Darwinism simply cannot be a worldview because it is a scientific theory, not a religious creed or philosophical system: how can it offer value judgements or political stances when it merely tells us what *is* in biology not what *ought* to be in human affairs? But many evolutionary scientists have gone so far off-script as to advocate not only a scientific explanation but an anti-religious ideology. Doing so contradicts science communicators' aim of not merely addressing the public's perceived deficit of scientific knowledge, but to fostering a *critical understanding of scientific practices*, the so-called CUSP model of science communication (Perrault, 2013, p. 10); and it violates the separation of positive and normative claims: the vaunted fact–value distinction. Both of these are perhaps more popular among scholars *of* science than scholars *in* science. Thus, we have a situation in which the commentators' own worldview disinclines them to accept Darwinism as a worldview (with everything that word entails). In other words, this higher-level debate is a philosophical one, touching on the nature of normativity, moral realism, and scientific objectivity. These topics are somewhat “entry-level” in contemporary philosophy of science, but they subtend an important public debate, even as they are ignored by scholars of communication and rhetoric.

It is not that Darwinism *ought* to be a total worldview rather than a scientific theory. I argue here that Darwinism simply *is* a worldview, at

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<https://doi.org/10.1016/j.shpsa.2021.08.008>

Received 15 February 2021; Received in revised form 28 July 2021;

Available online 22 September 2021

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least as it is articulated by those with the best claim to be its spokespeople, in works of colloquial science and textbooks.¹ For that reason, the contested term, *Darwinism*, with its suffix redolent of ideology and *Weltanschauung* aspirations, is an apt signifier of how evolutionary science is in fact framed and understood, even if it ought not to be according to some people's worldviews. Dawkins — dubbed “Darwin's Rottweiler” (Elsdon-Baker, 2009, 1) — is one semi-official spokesperson. He prefers the term “orthodox neo-Darwinism” to describe his own views, reserving “Darwinism” as a descriptor of Darwin's own theory of evolution, distinguished by the emphasis on natural selection as the primary mechanism (Dawkins, 1986, xv). Other prominent authors use the terms interchangeably (Coyne, 2009, p. 255; Dennett, 1995, p. 21). For convenience, I use it to mean mainstream, textbook, neo-Darwinian evolutionary theory — and the additional territories that Darwinians now claim, as detailed below. This is not an argument for what *Darwinism* properly should mean in light of what Charles R. Darwin actually wrote. Actors on both sides of the Darwinism-ID debate use the term to mean something like mainstream evolutionary science, as opposed to theistic evolution, creationism, and Intelligent Design. I simply follow them, taking a descriptivist view of usage.

Ditto for *worldview*. The *OED* gives the primary sense as “a set of fundamental beliefs, values, etc., determining or constituting a comprehensive outlook on the world” (World-view, 2020). Tellingly, two of the examples cited for *Weltanschauung* refer to an evolutionary worldview (Weltanschauung, 2020). Scholars attempting a more warm-blooded definition have typically seen it as a capacious category, larger than a *viewpoint*, *schema*, *ideology*, or *mindset* (Koltko-Rivera, 2004, 4). In contemporary English, it seems to have grown beyond what Thomas Kuhn meant by *worldview* in the 1960s, or indeed the loanword, *Weltanschauung*, from which it derives (Van der Kooij et al., 2013, p. 210). Values are a necessary ingredient for a worldview, but the divine or transcendent is not (Koltko-Rivera, 2004, 5; Van der Kooij et al., 2013, p. 212). As we will see, some worldviews are more comprehensive than others. But it will become clear by way of examples how the term operates in this debate and how it invariably designates an intellectual stance that impinges on questions of value and purpose, if only negatively.

I will show how Darwinism is brazenly put forward as a worldview by many of the most influential contemporary writers on evolution. This raises a fraught question for researchers in science communication and rhetoric of science: if Darwinism, according to its most influential Anglophone boosters, has worldview implications, then should these not become part of the science that is taught or communicated? The standard line appears to be that outspoken Darwinians stray from the approved methodology of natural science into metaphysical territory that is off-limits. That *these* claims are often made from a commitment to the democratic values that underwrite the public understanding of science, needs to be seen as another is-ought dilemma, another essentially philosophical issue. The *ought* that science communication should promote a democratic ethos and a commitment to science as a method, not a system of values (except democratic values), is challenged by the *is* that scientists promote a Darwinism that goes beyond a circumscribed scientific theory and is frequently value-laden as well. One final layer completes the image. The backdrop is the attitude of the general public, who apparently do not recognise the encroachment of Darwinism, or don't care. The Darwin industry shows little sign of decline. But the impact on mainstream attitudes by pro- or anti-Darwinism rhetoric looks to be modest. The upshot is that although contemporary Darwinism seems to be a full-fledged worldview, its supporters and detractors do battle in an elite discourse that hasn't changed the minds of outsiders.

In the first two sections, I briefly outline how authors in the ID movement have accused Darwinians of having worldview ambitions and

how Darwinians like Richard Dawkins have responded by presenting the limits of orthodox neo-Darwinism, while still disclosing the broader significance of the theory. Then I examine other authors who are less circumspect and divulge a much more expansive program for *generalised Darwinism*. I then consider what this means for how the Darwinism-ID debate has been received by scholars in science communication and the rhetoric of science, and why the overlooked philosophical crux of the debate should have more impact on these fields, even while its public impact has been exaggerated.

2. Darwinism's worldview problem

[S]cientific naturalists can in good conscience say at one moment that they do not deal with God or religion, and then in the next breath make sweeping pronouncements about the purposelessness of the cosmos. (Johnson, 1991, 118)

Of authors defending ID, the best known are associated with the Discovery Institute: a conservative think tank founded in Seattle in 1990, under whose aegis the infamous “teach the controversy” campaign was promulgated (Forrest & Gross, 2007, pp. 19, 215). These authors are broadly pro-science, assenting to most mainstream biology. They happily acknowledge that natural selection plays some role in evolution, that there was descent from a common ancestor, and they recognise the long antiquity of the earth (Dembski, 2004, p. 323). They insist, however, that no undirected process, such as bare natural selection, could account fully for the complexity of living things. In Michael Behe's phrase, life exhibits “irreducible complexity,” especially evident in the intricacies of molecular biology (1996, 42).

Behe is a successful writer of colloquial science and one of the key people mentioned in the infamous Wedge document, which was leaked online in 1995. The document outlines the Discovery Institute's PR strategy for increasing ID's social and political influence. The stakes are high and concern worldviews. The Institute “seeks nothing less than the overthrow of materialism and its cultural legacies” (1998, 2); the authors aver that “in order to defeat materialism, we must cut it off at its source” which is “scientific materialism” (1998, 4). Some Darwinians have portrayed the leaking of the Wedge document as a kind of “gotcha” moment, revealing the religious and anti-scientific motivations behind the ID movement as well as its underhanded use of propaganda (Forrest & Gross, 2007, pp. 25–33). And the authors of the Wedge document do advocate framing ID as a heroic minority pushing against backward orthodoxy, just like scientific advances in the past (1998, 6). But this is all consistent with the public-facing pronouncements of ID. It would only count as deceptive if the authors don't really believe in the biochemical evidence of ID and are actually closet Darwinians. What the document omits is therefore instructive. The document doesn't say that ID is only a subterfuge and that the authors don't really believe modern science has any value, or that they should cloak themselves in the garb of science while secretly advancing creationism. Instead, the document discloses a plan for writing more trade books that explain ID with recourse to scientific evidence (which the document's authors find compelling) and which critique the worldview that Darwinism has become.

In one colloquial work, *The Edge of Evolution* (2009), Behe describes Darwinism as a “theory of everything” warning that “viewing the world through Darwinian glasses has spilled over into the humanities, law, and politics” (2009, 4). Several of his colleagues go further in painting Darwinism as having become too big for biology. In *Icons of Evolution* (2000), Jonathan Wells calls Darwinism a set of myths, more of a religion than a scientific theory, and claims it is a reflection of its proponents' “materialistic philosophy” (2000, 203). He notes, wearily, that such views, put forward by celebrity Darwinians like Dawkins and Stephen Jay Gould, now feature in biology textbooks too (2000, 228). For Douglas Axe in *Undeniable* (2016), the Darwinians' blindness is a symptom of a broader “materialist” worldview (2016, 13). He claims an esteemed nonreligious philosopher as an ally, citing Thomas Nagel's *Mind and Cosmos: Why the*

¹ I follow Erika Lorraine Milam in preferring *colloquial science* to the term *popular science*. This makes the register and potential audience the focus, rather than the actual popularity of the work (Milam, 2019, p. 284).

Materialist neo-Darwinian Conception of Nature is Almost Certainly False (2012). Nagel says the worldview proffered by the Darwinians is “ripe for displacement” and “the defenders of intelligent design deserve our gratitude for challenging a scientific world view”.² Axe, for his part, emphasises the lofty philosophical themes of the debate:

To what or to whom do we owe our existence? This has to be the starting point for people who take life seriously — scientists and nonscientists alike. We cannot rest without the answer, because absolutely everything of importance is riding on it. To know where everything came from is to know where we came from, and where we came from has everything to do with who we are, and who we are has everything to do with how we ought to live. (Axe, 2016, 14)

Note the happy conflation of is and ought. The question that Darwinism purports to answer — incorrectly in Axe's mind — is a question of purpose.

The most bullish on the worldview point is Stephen C. Meyer, the Discovery Institute's resident philosopher (most ID authors are scientists, mathematicians, or engineers). In *Darwin's Doubt* (2013), Meyer asserts that contemporary Darwinism is really an arm of New Atheism, itself the latest incarnation of “scientific materialism”.³ In *Signature in the Cell* (2009), he summarises the worldview point:

chemical evolutionary theory and neo-Darwinism raise unavoidable metaphysical and religious questions. Arguably, these theories also have incorrigibly metaphysical and religious (or antireligious) implications. At the very least, many scientists think that evolutionary theory has larger metaphysical, religious (or antireligious), or worldview implications. (2009, 446)

Meyer makes three claims here, all germane. First, neo-Darwinism prompts metaphysical and religious questions. That is, contrary to Gould's famous line about “non-overlapping magisteria,” the positive facts of Darwinism by themselves naturally raise normative questions. Second, the stronger claim that the theory, if true, does indeed suggest answers to metaphysical and religious questions, perhaps even undermining or negating religious views. Third, Meyer makes a claim about which views current scientists actually adhere to. The first two claims wade right into the swamp of is–ought problems; in the final section I will address this tangled web. But with the third claim Meyer is unambiguously correct.

As I will show in the next two sections, many contemporary scientists, arguing in the forum of colloquial science, believe that Darwinism has metaphysical, religious — often antireligious — and worldview implications. It is another question as to whether the scientists are motivated by some other ideology to try and fashion Darwinism into a worldview, or whether their worldview emanates from their knowledge of Darwinism. And it is a further point of interest to intellectual historians as to what that ideology is properly called: naturalism, reductionism, scientific materialism, etc. In any case, the brand of Darwinism communicated in colloquial works constitutes a worldview that encroaches on religion, metaphysics, politics, and ethics.

3. Official Darwinism: only a theory?

“Life has no design, no purpose, no evil and no good, nothing but blind pitiless indifference” (Dawkins, 1995, 131).

² See Nagel (2012, 12). There are plenty of other non-religious philosophers who also see contemporary Darwinism — or at least the public versions of it — as an unremitting worldview. Notably Mary Midgley, Michael Ruse, and Jerry Fodor, as well as John Gray (discussed below).

³ Meyer (2013, 409). It is not only defenders of ID who make this point. Young Earth creationists like Ken Ham do as well (2012, 138–41) and so do some supporters of theistic evolution, such as John Haught (2009, 230). I restrict my focus to ID because that is who the Darwinians write against.

Biology textbooks are usually more circumspect than colloquial works, but some mention the annihilation of purpose that natural selection is supposed to have achieved. The most widely used textbook on evolutionary biology is *Evolution* (2009) by Douglas Futuyma and Mark Kirkpatrick. By showing how evolution could happen via the “blind, uncaring process of natural selection, Darwin made theological or spiritual explanations of the life processes superfluous” (2009, 5). They admit the “unsettling” philosophical implications, given all answers to *why* questions are “made completely superfluous by Darwin's theory of natural selection” (2009, 12). Hall and Hallgrímsson's *Strickberger's Evolution* (2000) says all life can “be explained by natural selection without the intervention of a god” and that “randomness and uncertainty had replaced a deity having conscious, purposeful, human characteristics” (2000, 71). A textbook by Joseph Levine and Kenneth Miller summarises the philosophical impact of Darwin's work:

Darwin knew that accepting his theory required believing in philosophical materialism, the conviction that matter is the stuff of all existence and that all mental and spiritual phenomena are its by-products. Darwinian evolution was not only purposeless but also heartless — a process in which the rigors of nature ruthlessly eliminate the unfit. Suddenly, humanity was reduced to just one more species in a world that cared nothing for us. The great human mind was no more than a mass of evolving neurons. Worst of all, there was no divine plan to guide us. (1994, 161).

Not all textbooks press this point, or even mention it. Nor is this view necessarily accurate or useful from the point of view of intellectual history. But the above are mainstream undergraduate level texts. This is the kind of place one might go for an introduction to “official” Darwinism and be confronted with at least an oblique view onto its — apparently bleak — worldview implications.⁴

Perhaps the most influential work on Darwinian evolution is Richard Dawkins' *The Selfish Gene* (2016), a perennial top seller and the most cited source on evolutionary biology from the twentieth century.⁵ From page one, Dawkins announces the scope of Darwin's theory: “Living organisms have existed on earth, without ever knowing why, for over 3000 million years before the truth finally dawned on one of them,” and while others had “inklings of the truth,” it was “Darwin who first put together a coherent and tenable account of why we exist” (2016, 1). Not *how*, but *why*, Dawkins attests, echoing the view of Futuyma and Kirkpatrick as well as Axe's claim above. Thanks to Darwin, we no longer have to rely on “superstition when faced with the deep problems: Is there a meaning to life? What are we for?” (2016, 1). In fact, “Darwin provides a solution, the only feasible one so far suggested, to the deep problem of our existence” (2016, 15). The book details the “profound philosophical significance” of Darwinism and exposes the scandal that, “Philosophy and the subjects known as ‘humanities’ are still taught almost as if Darwin had never lived” (2016, 1). Dawkins nevertheless does some hedging. He warns readers not to confuse ises and

⁴ A more intrepid reader might inspect a biography of Darwin. Janet Browne's two volume work (1995, 2006) is a veritable standard text on Darwin and as good a biography to be found on anyone. She closes the first volume with how *The Origin of Species* would impact the Victorian worldview: “the world steeped in moral meaning which helped mankind seek out higher goals in life, was not Darwin's. Darwin's view of nature was dark — black. At its most basic level his theory required a stunning readjustment of intellectual and emotional focus. Where most men and women generally believed in some kind of design in nature — some kind of plan and order — and felt a deep-seated, mostly inexpressible belief that their existence had meaning, Darwin wanted them to see all life as empty of any divine purpose” (1995, 542).

⁵ There is a paper on a statistical method for estimating the confidence of a phylogenetic connection that has more citations, although it's probably not the place readers would look for a presentation of Darwinism; see Felsenstein (1985). From the nineteenth century, *The Origin of Species* (in all its additions) also has more citations than *The Selfish Gene*. These results are based on Google Scholar citation numbers.

oughts and decries social Darwinism and genetic determinism (2016, 3). What makes humans unique, and therefore not explained totally by Darwinism, is our “power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination” (2016, 77, 260).

Dawkins' brand of Darwinism is at the very least a worldview in a kind of apophatic sense. Even if Dawkins does not articulate a positive vision of what politics or morality informed by Darwinism would look like, it is clearly supposed to negate other political or moral programs that cannot align with Darwinism. Notoriously, Dawkins opposes Darwinism to traditional religion.⁶ But the above sentiment would also cancel out most life philosophies, folk beliefs, secular ideologies, and other belief systems. Any worldview that involves teleology or any sense of purpose, particularly a purpose for the universe as a whole, is strictly incompatible with Dawkins' Darwinism. But a long running PR problem — perceived if not actual — for advocates of Darwinism has been how natural selection's dissolution of design and purpose in the natural world can be prevented from eating away at human designs and human purposes. Dawkins discovered this in the feedback to the first edition of *The Selfish Gene*. Some readers contacted him to complain that the book had shown “life was empty and purposeless” (2016, xv). In response, Dawkins counsels that, “If something is true, no amount of wishful thinking can undo it,” and that, “Presumably there is indeed no purpose in the ultimate fate of the cosmos, but do any of us really tie our life's hopes to the ultimate fate of the cosmos anyway? Of course we don't; not if we are sane” (2016, xv). If we take this seriously, Dawkins' neo-Darwinian worldview renders most other worldviews insane. From the facts of evolutionary science, the values of the vast majority of humans are nullified: itself a bold value judgement and political statement.

Jerry Coyne, a stalwart neo-Darwinian and outspoken atheist, is in many ways Dawkins' American counterpart. In *Why Evolution is True* (2009), he acknowledges that Darwin's championing of natural selection has had a large and often “disturbing” impact on people's worldviews (2009, 126). Readers are reminded that “Evolution operates in a purposeless, materialistic way,” but many scientists “have found profound spiritual satisfaction in contemplating the wonders of the universe and our ability to comprehend them” (2009, 252). Non-scientists among us can “find meaning in our work, our families, and our avocations” and there is “solace, and food for the brain, in music, art, literature, and philosophy” (2009, 252). These bromides may seem an incongruous note on which to end what is otherwise a fairly unvarnished summary of the main lines of evidence that support evolutionary theory. Their inclusion may be owing to Coyne's familiarity with the usual criticisms of Darwinism made by the ID movement. Notably, he accepts their claim that Darwinism is based in a naturalistic worldview: “The message of evolution, and of all science, is one of naturalistic materialism,” (2009, 244). He therefore tries to reassure readers that meaning is still possible, while also distancing Darwinism from any specific moral or political content. “Evolution is neither moral nor immoral,” says Coyne, “It just is” (2009, 253). But it is clear from other passages in the book that the theory of evolution is also meant to inspire, beyond being a useful theory, even if it implies a bleak worldview. For example, he uses a quotation from Michael Shermer — another prominent public atheist and science booster — as the introduction's epigraph:

Darwin matters because evolution matters. Evolution matters because science matters. Science matters because it is the preeminent story of our age, an epic saga about who we are, where we came from, and where we are going” (Shermer in Coyne, 2009, xiv).

Like Dawkins, Coyne claims more than mere use-value for scientific theories. Darwinism has the mythopoeic power to explain our origins and guide our future.

⁶ Dawkins' made the provocative claim in *The Selfish Gene* that religion might be a virus of the mind, a meme that replicates for its own benefit rather than its host's, thereby attempting to subsume religion into a Darwinian framework (2016, 250–8).

In sum, Dawkins, Coyne and the textbook authors, weary of ID, explicitly deny that Darwinism *should* inform politics or morality. They cannot go so far as to deny that, oftentimes, it does so, but they designate social Darwinism and eugenics as misinterpretations of Darwinism and improper derivations of ought from is. But the way they underscore the impact of natural selection on questions of purpose, arguably blurs that distinction. Evidently, some readers of Dawkins do think the implications of Darwinism impinge on their worldview and their search for meaning. This includes the readers he responds to, who are disheartened by the implications, and supporters of ID who disagree with those implications. The philosopher Mary Midgley provides a nonreligious barometer of Dawkins' consistent worldview ambitions. Over four decades, she tracked Dawkins' writings within the larger intellectual culture, repeatedly adverting to the bleakness of the worldview they expressed (1979 455–8; 1985 122–4; 2010 3–4, 110–11). Nevertheless, Dawkins' efforts at rebutting these readings have also been consistent for decades, as he has strained to keep Darwinism away from the political stigma of social Darwinism and the lack of rigor he sees in the humanities. Both he and Coyne testify that Darwin's obliteration of purpose informs a larger worldview, but one that apparently shouldn't get mixed up in politics. I now turn to how these efforts are sabotaged by more loose-lipped Darwinians.

4. Generalised Darwinism: a *Shanda fur die Goyim*

David Sloan Wilson has a number of trade books showcasing what Darwin can offer the humanities and social sciences. The latest, *This View of Life* (2019), calls for the “completion of the Darwinian revolution” — the use of Darwinism in social policy. Wilson abjures social Darwinism, of which “Darwin's theory stands falsely accused” (2019, 18). But he admits his book “unabashedly goes beyond what is to provide a blueprint for *what we ought to become*” (2019, xiv). “We need,” he declares, “not just a theory that states what is, but a worldview that informs how we ought to act, while remaining fully within the bounds of scientific knowledge” (2019, 12). Matt Ridley's *The Evolution of Everything* (2015) also argues for an expanded domain for Darwinian evolution. Ridley posits that *The Origin of Species* outlined what was only Darwin's “special theory of evolution,” while a “general theory,” using the same mechanism of natural selection, can be applied to technology, economics, education, morality, and much else (2015, 5). Even authors who attempt to add new dimensions to evolutionary theory, beyond the strict neo-Darwinism of Dawkins, argue for the great reach of the kernel of Darwinism, natural selection. In *Reinventing the Sacred* (2008), Stuart Kauffman advocates “a worldview beyond reductionism” via an augmented form of Darwinism (2008, 2). More than a purely biological principle, “natural selection transcends any specific physical realization of it” and even “transcends this specific universe” (2008, 41). By investigating how living processes resist description by physics, Kauffman argues, in effect, that Darwinism trumps quantum physics and general relativity as the fundamental explanatory theory of phenomena.⁷ Nor does it stop at the evolution of living things. Natural selection and the laws of biological complexity can also build “a worldview in which brute facts yield values, a way to derive ought from is” (2008, 8).

Then there are authors who write *evolutionary epics* — a coinage of another influential Darwinian, E.O. Wilson (1978, 271). These are nonfiction narratives covering the whole span of evolutionary history. As Ian Hesketh notes, they frequently employ the same tropes found in nineteenth-century popularisations like Robert Chambers' *The Vestiges of the Natural History of Creation*, especially the use of a progressive or teleological narrative (2015, 198–9). The new evolutionary epics likewise see evolution as an all-encompassing model for the unfolding of the cosmos at every scale, not just biological life. Ursula Goodenough offers a typical twentieth-century example. She identifies as a non-religious Darwinian, but holds out for a derivation of values and meaning from

⁷ This is a position Kauffman elaborates in *A World Beyond Physics* (2019).

the tree of life (1998, 66–7). *The Sacred Depths of Nature* (1998) is her attempt to tell a secular creation story (1998, xv–xvi). Although there are no supernatural elements, the narrative inevitably has a progressive tilt and like other works in the genre, ends on humanity's understanding evolution as the culmination of evolution.

For the evolutionary epicists — as for Kauffman — the overall tendency of the universe to greater entropy is resisted only by the accrual of novelty made possible by replication and variation. A kind of scientific Manichaeism presents itself: the universe as a titanic struggle between the destructive enormity of the second law of thermodynamics and the creative power of Darwinian evolution; chaos versus order; darkness versus light.⁸

The moral dimension of this struggle is taken literally by some popular philosophers. The more provocative ones, like John Gray, use Darwinian evolution as an abattoir for the sacred cows of their readers. In *Straw Dogs* (2002), Gray issues a total veto on any attempt to know truth because “if Darwin's theory of natural selection is true this is impossible” (2002, 26). The *true* in that sentence would seem to be living on borrowed time, but Gray's point is salutary: “The human mind serves evolutionary success, not truth” (2002, 26). Thus any pretence to veridical statements or theories is, like any notion of hope or progress, nothing but a pipedream of naive humanism (2002, xii, 4). Alex Rosenberg is even gloomier in *The Atheist's Guide to Reality* (2011). Combining the pitiless second law of thermodynamics and Darwinian evolution, Rosenberg concludes that *all* teleology is impossible. This includes not only the appearance of design in the natural world that Dawkins would quash, but any “plans, purposes, or designs” in the human mind or human affairs (2011, 205–6, 220). Neither can there be any beliefs, morals, or norms because they are not the kinds of things that exist in a universe governed totally by the laws of physics and Darwinian evolution (2011, 100–2). Rosenberg offers “nice nihilism” as the only valid response to such a worldview and advises us to combat any resultant *Weltschmerz* by taking Prozac “until it starts working” (2011, 282).

The most elaborated version of philosophically informed Darwinism is communicated via another trade book and one well known to proponents of ID: Daniel Dennett's *Darwin's Dangerous Idea: Evolution and the Meanings of Life* (1995). In a highly influential work of philosophy, Dennett generalises Darwinism by making it a “substrate neutral” algorithm that can mindlessly produce complexity given the right ingredients: the dynamics of replication and variation, as per Dawkins. It explains the existence of complex life in Earth's biosphere and anything else complex enough to be worth explaining (1995, 58–9). The book ranges over topics in biology, history, linguistics, psychology, anthropology, computer science, politics, ethics, and religion itself.⁹ Dennett offers not so much a reprise of the evolutionary epic, as the kind of visionary extension of evolution popular in the post-war years. G.G. Simpson's *The Meaning of Evolution* (1949) and Julian Huxley's *Evolution in Action* (1953) are two forerunners. Unlike them, Dennett is against eugenics and social Darwinism. But he supports bringing the facts of evolution into the normative arena: “If ‘ought’ cannot be derived from ‘is,’ just what can ‘ought’ be derived from?” (1995, 467). By the end of the book Dennett has given us a naturalistic way to “redesign morality,” a “moral first aid manual” for political debate and policy design, and even a version of God — “the Tree of Life” — worthy of spiritual affirmation (1995, 494, 505–10, 520). All this is arrived at with the “general form of the schema of Darwinian

⁸ Physicists writing colloquial science often embrace generalised Darwinism too. See Brian Greene's *Until the End of Time: Mind, Matter and Our Search for Meaning in an Evolving Universe* (2020) and Sean C. Carroll's *The Big Picture* (2016) for endorsements of Darwinism as a general purpose explanation for complex phenomena, living and nonliving. See Greene (2020 101, 112–3) and Carroll (2016 252, 286).

⁹ In the years since *Darwin's Dangerous Idea*, several scientists have elaborated Darwinian explanations of religious belief, most notably Scott Atran's *In Gods We Trust* (2002), Pascal Boyer's *Religion Explained* (2001), and David Sloan Wilson's *Darwin's Cathedral* (2002). Dennett himself later wrote a book-length treatment of the topic, *Breaking the Spell* (2006), which draws heavily on the above works.

explanation”: Darwin's algorithm, working incrementally over long time periods, can create not only species, but airier things like reasons, meanings, purposes, and ethics (1995, 200).

All these approaches could be classified as attempts at *generalised Darwinism*: an extension of natural selection or other tenets of standard evolutionary theory into domains other than biology, sometimes even as an organising principle for all phenomena.¹⁰ They far exceed even the most extreme versions of bleakness arrogated to Darwinians by the ID authors mentioned above; doubtless, the evolutionary epicists would protest that theirs is an uplifting narrative, but the features of the world they deny are still the stuff of most people's worldviews. Against the demarcation efforts of Dawkins and Coyne, the authors mentioned in this section happily delve into politics, morality, and other normative realms. A wider survey would confirm Darwinism's application to just about any discourse, any domain of knowledge. There is literary Darwinism, neural Darwinism, quantum Darwinism, and cosmological Darwinism.¹¹ These are in addition to the more widely known grabs for influence embodied in sociobiology and Dawkins' own memetics. In the philosophical literature, there are of course more esoteric articulations of generalised Darwinism with even grander claims.¹² But mainstream Darwinism, as conveyed to mainstream audiences in these trade books of colloquial science, narrative history, and popular philosophy, has gargantuan worldview implications. The likes of Dennett offer a positive case: our ethics, our politics, our overall life philosophy, along with the ongoing project of gaining knowledge in any discipline whatever, are all informed by *and can only be because* of the Darwinian algorithm responsible for everything more interesting than hydrogen atoms. Rosenberg gives the negative version: all of these things are undermined by the anti-teleological lesson of Darwinism.

For careful debaters like Coyne and Dawkins, this must be something like a *shanda fur di goyim*: an embarrassing act made in public, surely playing into the prejudices of anti-Darwinians, like those ID advocates who already think it is a worldview masquerading as a scientific theory.¹³ Indeed, even Dawkins, always wary of being associated with moral or political agendas that diminish the prestige of science, can barely refrain from celebrating the sweeping consequences of his favourite idea. To me, this worldview or philosophical ambition is the most notable and most apparent feature of the public communication of contemporary Darwinism. In this regard it differs from other science outreach projects based in physics, chemistry, geology, neuroscience, *etc.* Surprisingly, it hasn't attracted much comment among my colleagues in science communication and the rhetoric of science.

5. Rhetoric and communication

The various scholarly responses to the Darwinism–ID debate, from outside of philosophy, have mainly eschewed the worldview issue. Scholars interested in the public uses of science — chiefly science communication and the rhetoric of science — have instead critiqued the methods and arguments of writers on both sides. Their assessments of ID have been withering. They centre on the ID strategy of co-opting the language, methods, and cachet of science in an attempt to have ID considered a scientific theory (Bellolio, 2020; Ceccarelli, 2011; Homchick, 2012). Other studies try to account for the narrative or debating success of design arguments despite their coming from what should be a position of rhetorical or evidential weakness (McLure, 2009; Park, 2001).

¹⁰ Others use the term *universal Darwinism*. That is confusing. Dawkins coined that term for his conjecture that life anywhere in the universe would evolve in a Darwinian manner, as opposed to, say, a Lamarckian manner. See Dawkins 2016, pp. 248, 423. One could adhere to Dawkins' universal Darwinism while objecting to most versions of generalised Darwinism.

¹¹ See respectively Joseph Carroll (2004), Gerald Edelman (1987), Zurek and Hubert (2009), and Lee Smolin (2004).

¹² See for example Campbell and Price (2019), Last, 2018, and Vidal (2014).

¹³ Weber and Depew make this claim, calling Dawkins and Dennett “hyper-adaptationists” who play into the hands of ID rhetoric (2011, 186n3).

They also criticise the Darwinians. This mainly involves identifying problems with how science is framed by outspoken Darwinians. In some cases this is because certain framings inadvertently aid the cause of ID. Cynthia Taylor and Bryan Desbery (2018), for instance, point out that machine metaphors in biology give succour to ID claims, because a machine implies a designer (2018, 3). One study on framing effects noted that scientists invoking the value of fairness played into ID interests by opening a discursive space in which a scientific debate could be had even in the absence of any expert support for ID (Nelson, Wittmer & Carnahan, 2015). The authors show that training in *methodological naturalism* can reduce the effect, by reminding people that all scientific claims are judged, ideally, against common empirical standards (2015, 641).

A side note on methodological naturalism (MN) is warranted. It is most associated with the philosopher Robert Pennock, a frequent combatant of creationists, and his contrasting it with ontological or metaphysical naturalism.¹⁴ This latter is the strong claim that there are no supernatural entities and all that exists are natural phenomena. Such a view is clearly inimical to certain religious claims. But MN is offered as a prescription: science should proceed without invoking supernatural entities in explanations and so remaining agnostic as to their existence. Pennock claims that the worldview-based attacks of ID are unfounded “because they see ‘Darwinism’ as being on a par with Marxism” and “use the term to mean ‘fully naturalistic evolution,’ by which they mean a metaphysical position that denies the existence of God” whereas “Darwinian evolution is a scientific view, not a metaphysical one” (2004, 138). MN is a popular tenet among irenic science communicators because it offers a way to discuss evolution without having to directly challenge the metaphysical views of believers.¹⁵

Other scholars of the Darwinism–ID debate (as opposed to writers participating in the debate) do address the worldview implications of Darwinism, but only as a part of their critiques of the Darwinians’ rhetoric. Matthew Nisbet criticises Dawkins for rejecting the view that science and religion operate in separate domains; doing so feeds into a conflict narrative that only serves ID interests (2009, 19). Joseph Baker, meanwhile, sees the Darwinism–ID debate as only superficially about larger worldviews or abstract battles between science and religion, and really about different groups vying for influence, status, and public authority (2012, 349). Fern Elsdon-Baker cautions that the likes of Dawkins go too far in associating Darwinism with atheism (2009, 239). Doing so not only bolsters the conflict narrative, it alienates potential allies in the religious community and deprives students of biological knowledge that needn’t be incompatible with their religion (2009, 250–3). Like Baker, Elsdon-Baker attributes more worldly aims to Dawkins and the ID authors, even joking that they might in some sense be “in cahoots” given the mutual benefit to stoking the controversy (2009, 240–1). Book sales on both sides of the debate do hint that a perceived conflict, aided by a few high-profile court cases and public controversies, is good business for all the writers involved.¹⁶ But most work in this area emphasises rhetorical

¹⁴ Pennock has written about this in many places. The *locus classicus* is his anti-creationism book, *The Tower of Babel* (1999, 191–4). There is also a reasonably extensive literature on the issue, some of it criticising the distinction along the lines that methodological naturalism devolves into ontological naturalism anyway by supposing that supernatural entities have no place in scientific explanation because they have no causal relation to the world and so might as well not exist. See Boudry, Blancke and Braeckman for a recent discussion (2012).

¹⁵ For articulations of MN as a key part of the science communicator’s ethos, see Elsdon-Baker (2015), Nelson, Wittmer and Carnahan (2015), Pigliucci (2006), and van Dijk (2011).

¹⁶ The books by Axe, Behe, Dembski, and Meyer achieve comparable sales to the most popular mainstream books about evolution. And within the sub-genre of colloquial science about evolution, it is precisely the combative texts of Dawkins and Coyne — along with one by Bill Nye who writes in response to the creationist, Ken Ham — that appear to have been most commercially successful. These sales estimates are based on a mix of number of Amazon reviews, Amazon page ranks, and number of citations.

goals in addition to a simple economic imperative. It is typically assumed that there is a more effective or more appropriate way to communicate Darwinism, and the best known Darwinians fail to do it. Both things must be true to some extent. However, none of these studies entertain the idea that Darwinism simply is a worldview and so even a refined and better communicated version may still alienate certain publics.

A final study to illustrate my broader point. Leah Ceccarelli, an eminent scholar of rhetoric, wrote an influential article about “manufactured scientific controversies”, including Intelligent Design (2011). Ceccarelli finds that supporters of ID take advantage of rhetorical ploys that make it appear as though ID is a new scientific opinion struggling against the tyranny of orthodoxy, not unlike major scientific breakthroughs of the past, including Darwin’s (2011, 198, 206). The remedy suggested to scientists and science communicators is, of course, better rhetoric:

defenders of the scientific mainstream should not hesitate to offer rebuttals that reveal a manufactured scientific controversy for what it is, pointing to the “smoking gun” memos that expose the political machinations behind organized campaigns to defeat inconvenient scientific knowledge in the public forum. (2011, 216)

This is a reference to the Wedge document and Ceccarelli compares the efforts of the Discovery Institute to the campaign to discredit climate science: “Both are contemporary scientific controversies that have been successfully manufactured for American audiences” (2011, 211). I disagree. It is not useful to group the two together and doing so is unfair to the ID movement who, regardless of the dubiety of their claims, seem to make them sincerely.

Among the recent scientific *causes célèbres*, the Darwinism debates are different, perhaps unique. Rather than being some trumped-up controversy serving a clear financial or political cause, the ID movement seems genuinely to be motivated by moral, metaphysical, and even scientific concern. Far from a smoking gun, the Wedge document is closer to Chekov’s gun: a telegraphed promise that ID authors have gone on to fulfil in colloquial writings (Menuge, 2004, pp. 33–5). To wit, here is the Wedge document’s recommendation to use the appeal to fairness identified by Ceccarelli:

A lesson we have learned from the history of science is that it is unnecessary to outnumber the opposing establishment. Scientific revolutions are usually staged by an initially small and relatively young group of scientists who are not blinded by the prevailing prejudices and who are able to do creative work at the pressure points, that is, on those critical issues upon which whole systems of thought hinge. (1998, 4)

What the document makes clear is that its authors believe themselves to be that group who see through “prevailing prejudices”. In this way it is utterly unlike one of Ceccarelli’s other case studies, climate change. In that example, fossil fuel companies knowingly spread misinformation because of a clear material incentive to discredit mainstream science, with internal memos confirming that they did not actually believe the jury was out on global warming (Conway & Oreskes, 2011).

ID, however, is not a controversy fabricated by people who think natural selection really can explain everything, but who strategically deny the fact for some venal reason. Admittedly, we cannot be certain what any particular ID author privately believes. But we can see that even in internal documents they write *as though* they take it as given that Darwinism is inadequate. In fact, they write *as though* they think ID will win the day, based on the strength of scientific proof, if only given a fair hearing. They fear the scientific materialist worldview will lead to ruin. But they behave exactly as a group of people would behave if they honestly thought the solution was simply to espouse how evolution *really* works. In short, they disagree with Darwinism not because of some ulterior motive, but because it represents, by their lights, a worldview that is not only dangerous but also mistaken.

6. Darwinism is a worldview — depending on your worldview

“The theory of evolution is not just an inert piece of theoretical science. It is, and cannot help being, also a powerful folk-tale about human origins ... Scientists, when they find themselves caught up in these webs of symbolism, sometimes complain, calling for a sanitary cordon to keep them away from science. But this seems both psychologically and logically impossible.” (Midgley, 1985, 1)

An odd situation has developed. The interlocutors on both sides of the Darwinism–ID debate perceive a clash of worldviews. This is not the same as a narrative of conflict between science and religion. Much work in the sociology of science and the history of science has shown this to be at best an exaggeration and at worst a harmful myth. Moreover, it seems that the general public do not perceive a conflict between science and religion, even on the topic of evolution (Baker, 2012; Evans, 2011; Numbers, 2006); no one is barricading streets or firebombing offices in the name of ID or Darwinism. In fact, a majority of people worldwide, from across the worldview spectrum, think it is fine to believe in both god and evolution by natural selection (Elsdon-Baker, 2015, 433) — interestingly, it is mainly atheists who perceive a conflict. And an increasing body of research suggests that a better way to analyse the place of Darwinism in society, especially its interplay with religion, is to recognise that there are large differences between “lay” and “professional” actors within the arena (Kaden et al., 2018). The deliberately articulated positions of professionals, such as Dawkins or Meyer, are unrepresentative of ordinary people and do not reflect, or greatly influence, public opinion (Kaden et al., 2018, p. 504; Evans, 2019, pp. 330–34). This appears to be an elite discourse.

Nonetheless, the producers of the discourse, the professionals, do proclaim a mismatch of worldviews. Dawkins clearly feels they are irreconcilable. And generalised Darwinism — by giving specific answers to questions of meaning, value, and morality — trespasses on areas in which even Dawkins feels it is impolitic to make claims. The result is that a radical philosophical challenge to mainstream belief is somewhat blithely communicated in a popular genre. But this fact has not attracted much comment. Instead, most scholarly attention is paid to the subterranean tactics, not the surface arguments, in the Darwinism-ID debate.

Despite the publishing success, one could say that Meyer and his allies, who have never resiled from or attempted to hide the strategy outlined in the Wedge document, have still not had part of their case heard. Court rulings have kept Intelligent Design out of school curricula in America, but the fact that Darwinism — *qua* Dennett or Dawkins — clearly is more than a scientific theory with a purely biological remit, has been largely ignored. Meyer’s attempt to point out the latent philosophical underpinnings of Darwinism is rendered lame by the happy admissions of Darwinians themselves, some of them having proclaimed a generalised Darwinism more extreme than the relatively staid sounding “scientific materialism” of which Meyer warns. Neither side has persuaded commentators that the worldview issue is the crucial one.

This is doubly strange because the worldview debate has a long history. It certainly pre-dates the ID controversies, as does the early writing of some current participants; all the above quotations from Dawkins’ *Selfish Gene* appeared in the 1976 edition. Indeed, it was an earlier generation of Darwinians — including Jacques Monod, Michael Ghiselin, and E.O. Wilson — that Midgley rebuked in her *Evolution as a Religion* (1985), in terms of their immane “world-picture”.¹⁷ And critics who see some threat to a teleological or purposive worldview have opposed Darwinism since Darwin (Barzun

¹⁷ See Midgley (1985, 3). She shifts terminology to *worldview* in later works. The colloquial works she examines in her 1985 work are just as forthright as those included here. For instance, Monod says this about science’s role in negating other worldviews: “It is perfectly true that science attacks values. Not directly, since science is no judge of them and *must* ignore them; but it subverts every one of the mythical or philosophical ontogenies upon which the animist tradition, from the Australian aborigines to the dialectical materialists, has based morality, values, duties, rights, prohibitions” (Monod in Midgley, 1985, pp. 1–2).

1941, pp. 10–12, 336; Ellegård 1990, pp. 150–4; Kohn 1989, pp. 233–4). Today’s iteration may not even contain anything truly novel, even though there is much new scientific content. Arguments based in cutting edge biology, on both sides, still work to support either the argument for design or the operation of blind mechanism. The new frontiers of genetics and molecular biology have not changed the two camps’ platforms: natural selection, the epitome of materialism and blind mechanism, attacks purpose and the sovereignty of the human mind; and a politics informed by it is said either to be monstrous or the path to a technocratic and more enlightened society. The immediate reception of Darwin’s *Origin of Species* included participants who could substitute into these positions in place of Behe and Dawkins, as well as many who do not fit into a dichotomy, just like today.¹⁸ The debate also dovetails with a broader history of trying to derive ought from is and the challenges to such attempts (Daston, 2019). Arguably it is prefigured in an even older philosophical argument over materialism, reaching back to the atomists in Greece and the Carvaka in India (Hecht, 2003).

So why don’t more scholars look at this feature of the debate? This is where a “paranoid” reading would offer some ingenious rhetorical or seamy ideological motivation for why the worldview issue is neglected in certain disciplines.¹⁹ Perhaps it is just as unnecessary to diagnose a buried motive or latent reason for these scholars’ views, as it was with the ID advocates and their Wedge document. Remaining at the surface level instead, I think scholars in science communication and the rhetoric of science have a sincere belief in any combination of MN, the public understanding of science’s democratic ethos, and the fact–value dichotomy. Hence, it is *their* worldview, openly and lucidly professed, that renders them unlikely to accept Darwinism as a full-blown worldview, and more likely to frame it as a respectable scientific theory that a few zealous missionaries have embellished. This seems to be the only novel part of the contemporary scene: a set of scholars with a science-outreach or science-oversight agenda, who want to shield evolutionary theory or other branches of science from the worldview implications of public Darwinism.

At what point, then, would a consensus among experts emerge such that it would induce science communicators to extol not just a theory but a worldview? If mainstream science coalesced around a form of Darwinism closer to Dennett’s or Rosenberg’s — it is arguably already somewhere near Dawkins or Futuyma and Kirkpatrick — would science communicators follow suit? They would have to explain not only how natural selection led to speciation and adaptation, but also that applications of Darwinism to human affairs are fruitful, and that teleology, purpose, and even meaning are illusory. Science educators might go beyond saying that Darwinism contradicts Young Earth creationism, and explain that it also rules out an interventionist god, any purpose in nature, and any complex thing whose existence cannot be vouched for by a Darwinian process. Darwinism might be said to inform, indirectly, discussions in ethics and policy. This scenario sounds unlikely. In the US, this is especially so because of the separation of church and state and the constitutional prohibition on religious content in schools. Evolution-as-worldview therefore cannot be taught in schools because it would be tantamount to smuggling in religion: the very reason ID has been debarred.²⁰

¹⁸ For classic works on the immediate reception of *The Origin*, including in respect of worldviews, see Peter Bowler (1988) and David Hull (1973). More recently, Bowler has said Darwin’s development of natural selection, made it a pitched battle between “philosophical naturalism” on the one hand, and anything teleological — religious or otherwise — on the other (2013, 175). See John Hedley Brooke for an excellent article highlighting equivalencies between contemporary writers and those in Darwin’s own time (2009).

¹⁹ See Rita Felski’s *The Limits of Critique* for a wonderful exposition of recent trends in scholarly reading practices, including the turn away from a hermeneutics of suspicion to less paranoid strategies like surface reading (Felski 2015).

²⁰ I thank an anonymous reviewer for this point, which I hadn’t considered. Partly because I am Australian, not American, but also because in my former career as a teacher I taught English and never had to worry about whether content was violating an is–ought distinction or compromising NOMA. In an eleventh grade discussion of Darwinism in, for example, *Brave New World* or *The Time Machine*, oughts are the stock-in-trade.

But suppose that the Darwinians, the philosophers, and the ID advocates are right: Darwinism has worldview implications because it annuls other worldviews' notions of purpose, teleology, and meaning. Surely, then, it is in the public interest to know. The democratic ethos of science communication should extend to helping the public understand what Darwinism says about the meaning of life — though, evidently, the public are largely unfazed by, or unaware of, the possible clash with their own values. But recall the demoralised readers who corresponded with Dawkins. They may be a minority of the readership for *The Selfish Gene* and so an even smaller minority within the broader public. But they, at least, do not think that MN obtains, with the findings of evolutionary biology safely partitioned from metaphysical or moral concerns. On the contrary, those readers were much influenced by the normative implications of Dawkins' Darwinism. The attempt by scholars of communication and rhetoric to maintain the distinction between ises and oughts is, by their own standards, laudable. But not everyone believes in the partition, not everyone shares *their* worldview.

And so the strange outcome is that Darwinism's worldview implications are themselves dependent on one's worldview. For those cleaving to methodological naturalism or a faith in the fact–value dichotomy, their worldview entails a separation of scientific findings (regardless of how much they obtrude upon human behaviour and society) from broader worldview questions of value, meaning, politics, and ethics. For them, evolutionary science *cannot* have worldview implications, by definition. This seems to me like a precarious intellectual position. Evolutionary science, as articulated by scientists themselves and as understood by critics of the enterprise, clearly has worldview implications. Only by contradicting the experts and the most influential figures on both sides (as well as many philosophers of science) can scholars of communication and rhetoric uphold their worldview.

7. Conclusion

At some point, being good descriptivists, we have to allow that the word *Darwinism* denotes an ideology, a theory of vast ambition, a worldview. Even if less ardent biologists or science journalists say that Darwinism is actually just a scientific theory, with a restricted ambit and no metaphysical content, the weight of convention will be against them and, like dictionary editors, we will have to defer to the dominant usage in ascribing meaning to the word. The most popular books about Darwinism promote it as a worldview with applications to most fields, including the social sciences, politics, and our spiritual lives. Vehement critics of this program, in equally popular books, agree with the definition of the word inasmuch as they take it to be a worldview, with even stronger normative and metaphysical connotations. Textbook authors are more reserved but still advertise the worldview implications of natural selection. Taken together, these sources suggest that, in the public arena, contemporary evolutionary science appears under the banner of *Darwinism* as a worldview that incorrigibly challenges most traditional metaphysical views, including the major religions'.

For science communicators and rhetoricians of science it is awkward to concede this. Exhuming a conflict narrative serves no one, save a few publishers and some of the prenominate authors' retirement plans. But if it is true that mainstream Darwinism — even if that word simply designates unaugmented natural selection — has worldview implications, *then* that is a fact with which any public should be engaged. I understand the rationales for advocating methodological naturalism, or favouring the democratic values of CUSP over the deficit model. I understand why science communicators (like me) might want to distance themselves from Dawkins or Coyne, who probably alienate a lot of religious and nonreligious people who find the polemics distasteful; and, arguably, they don't even improve the scientific literacy of their readers. But when Dawkins says that Darwinism is not simply a good theory but a “transfiguration,” a new way of seeing, and an answer to major existential questions, his staunchest opponents agree with him. So too do a lineup of

renowned philosophers, both hostile and friendly to his cause: Dennett, Fodor, Midgley, Nagel, Plantinga, Ruse.

Darwinism has clearly breached its magisterium. Yet, as it stands, Darwinism has been grouped with climate change, anti-vaccination, and other scientific controversies. This is misleading. Darwinism today is more like a hot button topic in bioethics — like genetic modification or animal welfare — that uncomfortably blurs the boundaries of factual and evaluative inquiry. It should therefore be of interest to philosophers of science that the public debate continues to be framed by science communicators as one of bad rhetoric and worldly motives, rather than as a question of worldviews.

Funding

This research was completed as part of a postdoctoral position attached to an ARC Future Fellowship, namely. The place of history in science: reassessing the Darwinian revolution.

Acknowledgment

This research was conducted under an ARC Future Fellowship, “The place of history in science: reassessing the Darwinian revolution” (grant number: FT170100194).

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