Conveying Controversial Science:

Sam Harris’s *The Moral Landscape* and Popular Science Communication

by

Nathan W. Johnson

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Graduate Supervisory Committee:

Jason Robert, Chair
Richard Creath
Jacqueline Martinez
Edward Sylvester
John Lynch

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ABSTRACT

The academic literature on science communication widely acknowledges a problem: science communication between experts and lay audiences is important, but it is not done well. General audience popular science books, however, carry a reputation for clear science communication and are understudied in the academic literature. For this doctoral dissertation, I utilize Sam Harris's *The Moral Landscape*, a general audience science book on the particularly thorny topic of neuroscientific approaches to morality, as a case-study to explore the possibility of using general audience science books as models for science communication more broadly. I conduct a literary analysis of the text that delimits the scope of its project, its intended audience, and the domains of science to be communicated. I also identify seven literary aspects of the text: three positive aspects that facilitate clarity and four negative aspects that interfere with lay public engagement. I conclude that *The Moral Landscape* relies on an assumed knowledge base and intuitions of its audience that cannot reasonably be expected of lay audiences; therefore, it cannot properly be construed as popular science communication. It nevertheless contains normative lessons for the broader science project, both in literary aspects to be salvaged and literary aspects and concepts to consciously be avoided and combated. I note that *The Moral Landscape*'s failings can also be taken as an indication that typical descriptions of science communication offer under-detailed taxonomies of both audiences for science communication and the varieties of science communication aimed at those audiences. Future directions of study include rethinking appropriate target audiences for science
literacy projects and developing a more discriminating taxonomy of both science communication and lay publics.
DEDICATION

To Rebecca, for being the best teammate I ever could have dreamt up; to Kaden, for having that infectious laugh and reminding me life is a BALL; and to Celeste, for smiling, singing, dancing, and generally making my heart go 246. And if you’re wondering why I listed Kaden in the middle, it’s because I’m hungry for a sandwich.
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This dissertation is an investigation of an act of science communication in the particularly knotty domain of neuroscientific ethics, Sam Harris’s *The Moral Landscape*, and its implications for general efforts at expert science communication with the public. I am interested in the techniques expert scientists themselves use to convey complex, controversial ideas to broad lay publics without distorting or “dumbing down” those ideas in the process. This brand of public science communication, typically aimed at increasing the science literacy in the general population, is widely considered important for reasons detailed in Chapter 1. It is, however, according to most critical accounts, poorly executed if not an abject failure, particularly in the United States. These claims are made regarding communication of all kinds of science on various topics. Neuroscientific ethics, as an effort to bring scientific inquiry to an area traditionally considered to be under the purview of religion, philosophy, and other humanistic approaches, faces additional barriers and may be a particularly difficult area in which to execute popular science communication. An example of successful communication of neuroscientific ethics, then, would be an exceptional case: it could serve as evidence against broad claims of science communication’s failure, and it could serve as a model for those efforts at communication that have failed.

While I tend to generally agree with the assertion of science communication’s importance, that claim is not vital to my arguments here. For the purposes of this dissertation, I leave that importance unchallenged and focus instead on the latter claim,
that popular science communication is generally poorly executed. I confess that I initially found this claim confusing, as anecdotally I have encountered numerous general audience popular science books that have struck me as quite clear, well-executed instances of popular science communication. As discussed in Chapter 1, these general audience popular science books are understudied in the science communication literature, and therefore their impact maybe underappreciated. I therefore initially hypothesized that general audience popular science books could serve as models for science communication in other domains, and that hopefully some of the perceived failure of the broader science communication project – the efforts of communicators explicitly intending to combat science illiteracy in the general public – could be addressed by emulating those models.

A broad study of all popular science books, even limited to the most successful New York Times best sellers, would obviously be unwieldy and near impossible to execute. I therefore constrain my investigation here to a singular case study of Sam Harris’s recent popular science book on scientific approaches to understanding (and guiding) morality, The Moral Landscape (2010). Although this text is not truly an effort at augmenting popular science literacy (i.e., the purpose of the text does not line up exactly with the aims of the broader science communication project), it is a promising subject of study for numerous reasons outlined in detail in Chapter 1. These include Harris’s reputation for clarity, the controversy attached to the topic addressed, and the vigor with which its arguments are delivered. There is little that is subtle about The Moral Landscape; as such,
it readily yields to literary analysis and gives clear indications of the literary techniques that serve the clarity (and controversy) of its communication.

It is important to clarify that this dissertation is not a critique or rebuttal of Sam Harris’s arguments or interpretations of science within *The Moral Landscape*. Critique of the text (and, for that matter, Harris) is well-trodden ground (as I discuss below), and the exercise of experts critiquing other experts on their arguments and interpretations steers away from the domain of expert-to-laity communication in which I am interested. Rather, I interrogate the literary aspects that Harris uses to convey his argument and largely ignore whether the content of that argument (the claims, interpretations, scientific evidence brought to bear, etc.) is correct. To the extent that I approve or disapprove, agree or disagree with Harris’s work in *The Moral Landscape*, it is not on the basis of whether I find his arguments correct or compelling but whether I find his techniques to contribute to clarity in delivering his argument to a broad, lay public audience.

My original scholarly contribution, then, is a textual analysis of *The Moral Landscape* that focuses on the mode of delivery of the argument rather than the veracity of the argument itself. To my knowledge, this is the first critique covering Harris’s communicative technique rather than engaging the truth of his controversial claims about a science of morality. To conduct this textual analysis, I utilized a close-reading technique and an application of a variant of Grounded Theory adapted from the work of Marianne LeGreco and Sarah Tracy (2009). I first detail Harris’s statement of project

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1 Their own work on Grounded Theory draws from that of Glaser & Strauss (1967).
and kinds of science he aims to communicate as parts of his science of morality. I then identify seven literary aspects that are sorted into positive and negative categories to be imitated and avoided/taken under consideration, respectively, by participants in the broader science communication. This literary analysis is covered in detail in Chapters 2 and 3.

My hypothesis regarding general audience popular science texts like Harris’s *The Moral Landscape* serving as a model for science communication was largely rejected. There are elements of *The Moral Landscape* that contribute to science communication clarity and therefore qualify as imitable (although with caveats; see Chapter 3). Ultimately, however, I argue that the statement of project, the variants of science included, and the negative literary aspects overwhelm *The Moral Landscape* to the point that the book cannot be properly considered an effort at broad popular science communication intended for lay audiences. The book is, in short, overly restrictive and overly antagonistic towards audiences that do not already possess a large degree of relevant background science knowledge and who have not already accepted Harris’s claims and share many of his assumptions about the nature of the relationship between science and human experience. While it may be exceptionally clear science communication, it is only exceptionally clear to a fairly limited audience, and therefore the “general” of “general audience” warrants doubt.

This argument has three major conclusions. One, *The Moral Landscape* itself is likely a poor candidate to serve as a model for general science communication. While aspects of
it may be mined and qualified, the text as a whole is largely inimical to engagement with lay audiences. Two, the degree to which *The Moral Landscape* relies on knowledge and pro-science attitudes being already present in its audience gives it an air of (ironically enough) “preaching to the choir.” If this is a generalizable finding and good science communication actually requires audiences that are already well-informed and already take the primacy of science as the means of generating knowledge for granted, then the very foundational aims of the broader science communication project may be hopeless. I.e., communication projects attempting to clearly communicate with lay audiences that lack that knowledge and are not convinced of science’s primacy could be doomed to fail. Three, the characterization of *The Moral Landscape* that emerges (a non-expert level text that is nonetheless not aimed at lay audiences) challenges typical taxonomies of both “general” audiences and the science communication meant to address them. The “landscape” of science communication may need more stratification than simple expert/laity and expert/general audience dichotomies allow.

This dissertation also contains an additional auxiliary argument about difficulties special to the communication of neuroscientific accounts of ethics. This argument ties to the major arguments as another set of reasons to be pessimistic about the prospects for the success of the broader science communication project as presently conceived.

The structure of this dissertation is as follows:
In Chapter 1, I lay out the primary arguments of the dissertation and preview the textual analysis of Chapters 2 and 3. I establish the context of the science communication problem, provide a rationale for the use of *The Moral Landscape* as a case study, and outline the argument for its ultimate failure as a model for popular science communication and the implications of this failure.

In Chapter 2, I begin the textual analysis and focus on the statement of project and variant of science of *The Moral Landscape*. I illustrate the failure of *TML* to give a sufficiently broad orientation to the science of morality and argue that this failure and the initial signs of audience antagonism provide a context in which to question the text as a true act of science communication to a broad lay audience.

In Chapter 3, I continue the textual analysis and provide textual evidence for seven literary aspects that Harris utilizes in the course of his science communication. I argue that three of these aspects contribute to the clarity of the scientific explanation and are (with caveats) imitable for the broader science communication project. I then argue that four aspects prohibit successful communication with broad lay audiences and therefore not only ought be avoided but need to be taken under consideration by broader science communicators since the popularity of authors like Harris ensures that their use will be present in the popular milieu of the “science communication marketplace.” I conclude the chapter with an account of the normative lessons that can be gleaned from my textual analysis of *The Moral Landscape*. 
In Chapter 4, I make an argument for the inherent difficulties of popular science communication particular to neuroscientific accounts of ethics. I argue that these difficulties hinge both on the need to communicate materialistic notions of self to audience members who often hold dualistic notions of self and the fact that neuroscience itself lacks an explanation for how conscious experience arises from physical arrangements of matter. This chapter is to some degree auxiliary, but it is connected to the remainder of the dissertation in that it argues for another reason to be concerned about the realistic possibility of communicating with popular audiences about particular domains of science.

I conclude the dissertation with a summary of its findings: that while *The Moral Landscape* cannot properly be an act of popular science communication, it nevertheless contains normative lessons for the broader science communication project, both in literary aspects to be salvaged and literary aspects and concepts to consciously be avoided and combated. I note that *The Moral Landscape*’s failings can also be taken as an indication that typical descriptions of science communication offer under-detailed taxonomies of both audiences for science communication and the varieties of science communication aimed at those audiences. I end with a discussion of potential future areas of study, including case studies of other authors and importantly other topics of science communication and development more detailed taxonomies of both science communication audiences and texts.
In this chapter, I establish the context of a broadly conceived science communication project across various scientific disciplines that has education of the lay public in terms of scientific facts and scientific process as its foremost goals. This project is widely believed to be important for a variety of reasons but poorly executed in the popular domain. I initially question this claim of poor execution, noting a body of popular science literature—popular science books—that is routinely praised for its clarity, though noticeably under-studied in the science communication literature.

There are several examples of reportedly excellent popular science texts, so the claims of poor execution may seem overstated on their face. I note, though, that part of the poor execution stems from poor receptivity of audience such that a popular science book featuring a controversial application of science would be a rich area of study. To interrogate this intersection of allegedly clear popular science communication and barriers to receptivity of audience, I propose a case study of Sam Harris’s *The Moral Landscape* (*TML*). *TML* is an instance of reportedly good, clear popular science communication (e.g., Appiah, 2010; Blackford, 2010; Dawkins et al., 2010; Nagel, 2010) that runs the intriguing gamut of applying scientific inquiry (specifically neuroscientific and psychological inquiry) to a decidedly traditionally unscientific domain (morality and
ethics). I acknowledge that Harris is overtly not engaged in the broader scientific communication project, but his particular project as instantiated in TML – largely an anti-religious polemic aimed at spreading secular values – uses scientific evidence in the course of making its argument such that science communication incidentally takes place. Harris’s project has an interesting and almost inverted relationship to the broader science communication project; this relationship, TML’s controversial topic, and its reported clarity make it a promising case study.

(I emphasize here that when I criticize TML in any sense, I criticize it as an act of science communication and not as an intellectual work. In other words, I am not terribly concerned whether Harris’s argument is correct or whether his conclusions are true, but I am concerned with how he attempts to convey this argument and its conclusions and how he orients to the audience(s) he is purportedly attempting to convince via this text. Several authors have levied criticisms at Harris, so another rebuttal is unnecessary. My critique brings a novel approach by ignoring any potential flaws of the argument and instead focusing on whom he is trying to convince and how he is trying to convince them, and how these approaches inter-relate with broader efforts at informing the lay public).

I hypothesize that a close reading of The Moral Landscape (TML) can provide examples of communicative techniques to 1, imitate² (because they enable the sort of clarity that fosters effective communication); 2, account for (in terms of their impact on potential lay

² “Imitate” should not be taken as meaning “copy exactly,” as part of the clarity of Harris’s science communication derives from the reductive brand of science he is communicating, and I would not advocate imitating reductive science across the board. However, with the caveat that the clarity may be to some degree intertwined with reductivist programs, I still believe that the literary techniques of juxtaposition Harris employs are effective and warrant use.
audiences’ receptivity to science communication); and 3, differentiate from (because their use in service of Harris’s project – largely an argument for science as an absolute usurper of religious authority on all matters moral – may indicate approaches that participants in the broader scientific project ought to avoid if they are aiming to reach and not alienate the bulk of the American lay audience, the majority of whom is religious).

In the remainder of Chapter 1, I argue that communicative techniques that fit that third category (techniques from which to differentiate) overwhelm the text to the point that TML cannot truly be considered an effort at popular science communication, at least in any sense resembling the communication that targets general lay audiences emphasized in the broader science project. I support this argument by first outlining the manners in which TML restricts its potential audience to the point that it is clear it is not really intended for the lay public at large. This is not only because it contains anti-religious arguments (and obviously has the potential to alienate the majority of an American audience), but because the nature of the science evidence it brings to bear requires more extant background knowledge than is reasonably expected of a lay audience, and its characterization of multiple intellectual groups across a variety of axes as obviously wrongheaded indicate that only a select few who possess this background knowledge would seem capable of being “right-headed.” I then preview some of the implications for participants in the broader science communication project in terms of the most important features of TML from which to differentiate (in order to avoid the same sort of failure in engaging lay audiences that TML suffers).
Introduction

"The writings of science communication scholars suggest two dominant themes about science communication: it is important and it is not done well" (Treise & Weigold, 2002; see also Hartz & Chappell, 1997; Nelkin, 1995; Ziman 1992). Both of these themes are uncontroversial. For decades, scientists and related experts have expressed a general concern about the scientific wherewithal of lay publics, particularly in the United States. That this wherewithal is important for myriad reasons (discussed below) has gone largely unchallenged, and that good expert-to-laity direct science communication is the way to achieve informed publics has likewise gone unquestioned. Upon reflection, however, these themes are not independent factors of science communication and are more intertwined than they may appear at first glance.

The particular kinds of importance emphasized by science communications scholars place a restriction on the range of communication involving science that “counts.” This restriction means that science communication proper – hereafter referred to as “the broader science communication project” – consists of communication in the deficit model (between expert scientists / institutions and lay publics) (Treise & Weigold, 2002) that primarily has the intention of informing those lay publics. Within this domain, the emphasized end goal is extramural public science education, and assessment of the public’s science/scientific literacy (see below) determines science communication’s

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3 cf. arguments of how much science and for whom in Weigold, 2001; Maienschein, 1999; Miller, 1986.

4 cf. arguments regarding the paradoxical effects of too much communication and inability to overcome a disinterested public in Treise & Weigold, 2002; Miller, 1986.
efficacy. In the U.S., both science and scientific literacy are poor (Maienschein, 1999); therefore, it seems necessarily the case that this brand of science communication aimed at this audience has been ineffective / not done well.

If performance relative to these particular end goals is disentangled from assessment of the communication itself, however, one can imagine that science communication of a different sort⁵ could be well executed on its own terms. And while the success of such an alternative breed of science communication would necessarily not be well done by broader project standards, it could helpfully overlap with the broader science communication project such that its use as a communicative model to which to aspire would be warranted. In this chapter, I will argue that at least some popular science books – with Sam Harris’s *The Moral Landscape* being my exemplar case – meet this description of being engaged in a different sort of science communication project, and that this communication is good and clear if not effective in the broader project’s terms.

I hypothesize initially and do find that *The Moral Landscape* offers insight into rhetorical and conceptual techniques that render scientific arguments clear. These techniques are to some degree enmeshed with the particularly reductive variant of science that Harris advocates; nonetheless, with the caveat that this reductive variant is not necessarily ideal, I draw the normative conclusion that imitating these aspects of the text is recommended for scientific experts engaged in the broader science communication project. However,

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⁵ This is not to say that such science communication would not be important generally speaking, just that it would not be important in the way science communication scholars have emphasized and therefore its efficacy on its own terms may have been neglected by the science communication literature.
my close textual analysis reveals problematic aspects of the text that are worthy both of
differentiating from (meaning that same said scientific experts are advised to avoid
anything resembling some of The Moral Landscape’s rhetorical/conceptual techniques)
and accounting for (meaning that same said scientific experts must address the extant
strong, negative associations with science that some of Harris’s rhetorical flourishes
engender and reinforce).

Indeed, I ultimately argue that The Moral Landscape, while patently some form of
science communication, is not truly popular science communication in that its pre-
requirements of scientific knowledge, antagonism (if not outright abuse) of the vast
majority of the American popular audience (for reasons that go beyond its general
polemical stance towards religion), and failure to address basic notions of science meta-
communication\(^6\) exclude any reasonably-defined popular (lay) audience from engaging
its message. The text, despite its stated purposes and status as a New York Times best
seller, aims to compel an exceedingly narrow audience. And any clarity it achieves is
suspect of being over-reliant on the particular characteristics of that narrow audience. I
conclude with a comment that to the extent that the predominant feature of that narrow
audience is an abnormal level of pre-existing science/scientific literacy, the realized
clarity of texts like The Moral Landscape do little and/or are discouraging for the
prospect of similar clarity achievement in texts aimed at less science / scientifically
literate audiences.

\(^6\) By science meta-communication, I mean communication regarding science communication; e.g., argumentation not
just that science has a particular explanation of phenomenon, but argumentation that this particular scientific
explanation is more worthy than other scientific (or non-scientific) modes of explanation.
That science communication is important is uncontroversial, but the rationales for this importance are several. They differ first in the kind of scientific competency that serves as the goal. The predominant aimed-at competency, termed science literacy, focuses on “practical results … and short-term instrumental aims, notably training immediately productive members of society with specific facts and skills.” (Maienschein, 1998). For the purposes of this chapter, I take science communication with this end in mind to be engaged in the communication of scientific facts. The other competency, termed scientific literacy, “emphasizes scientific ways of knowing and the process of thinking critically and creatively about the natural world” (ibid.). I take science communication that focuses on science as an epistemological orientation and a set of methodologies to be engaged in the communication of scientific process. It is worth noting that scientific facts dominate popular science communication (Hartz and Chappel, 1997), particularly in day-to-day science journalism, and communicators that don’t explicitly describe their aims as fulfilling goals of science or scientific literacy are often implicitly concerned with the former.

Science and scientific literacy are not, of course, mutually exclusive aims. Still, individual science communication projects can (and often do) emphasize facts at the expense of process and default to a science literacy goal (and assessment of lay audiences’ capacities certainly measure science literacy in preference to scientific literacy) (Maienschein, 1998). I wonder whether the science meta-communication I reference above would be better served by embracing this scientific literacy goal as discussion of scientific process seems to inherently argue for the efficacy/supremacy of that process more effectively than a list of facts. (It is also worth noting that one can be engaged in “communication about” scientific facts and/or scientific process without committing to literacy endeavors where one is engaged in “communication of” these topics. As below, this is what I take Harris and others to be doing with their use of science in service of other intellectual arguments/agendas).
The rationales for the importance of science communication next differ in the assessments of the impacts of achieving these competency goals. Science communication scholars have made a number of claims regarding the utility of widespread science literacy in the general / lay population (independent of whether the efforts at science communication themselves have explicit or implicit aims of improving specifically science literacy). These include notions that informed publics would be (Treise & Weigold, 2002)

- Inherently preferable to uninformed ones (either for vague aesthetic reasons or because people in these publics would benefit from “a greater understanding for its own sake”)  
- Better at competing internationally in technology and science-based business 
- Better at formulating quality opinions on matters of governmental policy 
- More likely to understand the rationale for public funding of science and therefore more likely to support said public funding of science and/or less likely to combat it (Ziman, 1992; Weigold, 2011; Besley & Tanner, 2011) 
- Better able to differentiate competing technical arguments (in the marketplace, in areas of public science policy, etc.) 
- Better able to make rational personal choices (with better personal outcomes) 
- More skilled at discriminating science from pseudoscience 
- Generally more excited about science as a professional endeavor (so that young people would be interested in pursuing careers in science).

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8 This particular benefit being of great personal interest to publicly funded scientists.
The utility of *scientific literacy* encompasses many of these claims, warning that the present level of illiteracy in the U.S. may represent “a threat to our own wellbeing” (Maienschein, 1998). The clarity of thought afforded by *scientific literacy* would additionally help people to live good lives by capacitating flexibility, enabling wise choices, and facilitating noble endeavors such as “combating racism” by understanding science within its social context (not as “a pure and absolutely objective pursuit, insulated from all social forces”) (*ibid.*).

Whichever of these particular utilities a science communicator focuses on in the name of *science* or *scientific* literacy, it is plain that such science communication generally has the aim of betterment of the public, lay audience (or at the very least, elimination of the detriments associated with scientifically uninformed lay publics). As above, this domain of communication has long grabbed the bulk of attention of science scholars (Treise & Weigold, 2002) and serves as the “mainstream” form of science communication. This is something of an obvious point, but one worth establishing: most references to science communication, whether it is communication done by “journalists, public information officers, [or] scientists themselves” (Treise and Weigold, 2002), are references to individuals acting (however intentionally) under the auspices of a widespread project that has these sorts of “public betterment” objectives as driving goals. I refer to this widespread project as “the broader science communication project” in order to clearly distinguish it from other forms of communication involving *scientific facts* or *scientific process* that do not have these driving goals in mind.
For the purposes of this project, I am effectively accepting the claim that the science/-tific literacy aims of the broader science communication project are appropriate major goals for science communication. I recognize that this is fertile ground for debate, and as noted, there are questions regarding how much and what kinds of science the public really needs to grasp. However, in order to constrain the project’s scope, I am largely taking the legitimacy of these aims for granted and proceeding as though these are not only the concerns that broad science communicators have but also the ones they ought to have. So I am in essence arguing from the perspective of a committed broad science communication participant, at least with regard to appropriate goals and features of public science communication, and this dissertation should be viewed through that lens.

However, as much as I intend to accept this perspective and move forward as a neutral observer, I cannot pretend to have no stake in science communication or no opinions on what science communication ought to accomplish and how it ought to accomplish it. I should clarify that while I do agree with the general aim of public betterment via widespread science/-tific literacy, I do not believe this aim entirely captures the scope of what good science communication can and should do. Science communication should not merely promote literacy but should also engender excitement and enthusiasm for science in the public. This is clearly entangled in how accessible or widely received particular forms of science communication might be, but is somewhat separate from those goals in that it facilitates science being a major topic of public discourse. In short, there should be additional goals of enhancing science’s cultural cachet and capacity to inspire and motivate.
I additionally hold that science communicators have a responsibility to engage in the aforementioned meta-communication, communication about why science communication is worth listening to in the first place. And my overarching concern is that science communicators honestly engage the limitations of scientific inquiry such that they convey a sense of humility in exactly what “Science knows” and “Science can accomplish.” This is not to undersell science; rather, it is a requirement of authenticity in science communicators’ efforts such that they both accurately represent science’s capacity to generate knowledge and that their efforts be aimed at what they are stated to be aimed at, namely scientific understanding. If widespread scientific literacy is truly the primary aim – and not, say, tacit politicking to increase the power of scientists and scientific institutions in the public sphere – then doublespeak and hidden meanings that make communication impossible to take at face value are deleterious to what I take to be quality science communication.

**The (Thus Far) Failure of the Broader Science Communication Project**

The second major uncontroversial theme of science communication – again, science communication that is engaged in this broader project – is that it is poorly executed, primarily evidenced by the fact that American lay audiences give no indication that the goals of the broader project are being met. The reasons identified are several but are often pinned on the somewhat imprecise notion that science communication is “not done well.” I describe this notion as imprecise because it so often tied to the communication’s effects
or, as I’ll discuss below, characteristics of the communicators) rather than aspects of the communication itself that could explain just how it fails (or for that matter, could succeed). Whether citing poor science literacy rates (Maienschein and students, 1999), poor performance on international standard exams (Schmidt et al., 1996), or general errors and misconceptions prevalent in popular discourse (Treise & Weigold, 2002; Hartz & Chappell, 1997; Shortland and Gregory, 1991), current methods of science communication are generally found to be lacking not by virtue of the characteristics of the communication per se but by the population level metrics they allegedly should be affecting. This failure to achieve the broader project’s aims routinely prompts the unsurprising conclusion that science communication needs improvement.

Most attempts to get at the causes of the failure of the broader project thus far do not interrogate the communication itself, either. The ineffectiveness of current communication is varyingly explained by disinterested and/or uneducated publics (Miller, 1986), poorly trained and confused science journalists (Palen, 1994), or scientists' general lack of communication skills or motivation to publicly communicate (Hartz & Chappell, 1997; Gascoigne and Metcalfe, 1997). Because of the types of explanations offered, efforts at improvement tend to focus on attributes of persons. Scientists need to develop their communication skills (Weigold, 2001; Hartz & Chappell, 1997; Shortland and Gregory, 1991) or learn how to better work with journalists (Shortland & Gregory, 1991; Hartz & Chappell, 1997); more journalists need to earn science degrees (Palen, 1994; Hartz & Chappell, 1997) or undergo specific technical training (Hartz & Chappell, 1997; Trumbo et al., 1998). Most of these proposed fixes implicitly assume the deficit model of
science communication where experts deliver information absent from the public's knowledge base in order to plug gaps in the public's understanding of the world (Ziman, 1992).

Failures of science communication, then, are conceived of as failures of transmission, whether caused by the characteristics of the communicator or the audience. This carries over to the assessment of the effects of the communication, normally accomplished by testing the public's science literacy (Maienschein & students, 1998) (though N.B. again that Maienschein et al. prioritize scientific literacy). Burns et al. (2003) among others have expanded this evaluation of science communication to include its effects upon audience awareness, enjoyment, interest, and opinion-forming in addition to the traditional criteria of understanding (AEIOU factors). But these metrics, too, rely heavily on the deficit model and portray science communication as an effort to transmit those AEIOU factors from experts to a public that lacks them. The outcomes measured constitute before-and-after snapshots of the public, failing to capture the change in that public as a process.

Importantly, the deficit model, the explanations of bad communication via characteristics of people involved, and the focus on evaluation by measurement of those characteristics all collaborate to draw attention away from a central component of communicative projects: the communication itself. Part of my aim here, then, is to disentangle the text

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9 There are alternate models for science communication, of course, including the rational choice model and the context model (Ziman, 1992). But whether it is the best model or not, the broader science communication project remains largely rooted in this deficiency model (Weigold, 2001; Besley & Tanner, 2011) and approaches the topic accordingly.
from its communicators and audience, from external goals and their evaluation, to try to address problems of science communication as problems of texts. I see two benefits to this approach. One, textual problems seem more apt to yield to textual solutions. So if it is the case that there are successful texts involving the communication of scientific facts and/or process that have different aims from the broader science communication project (even if they are successful in terms of a different kind of science communication endeavor), they may therefore be worthy of imitation, at least in terms of textual aspects that are contributing to that success. Two, given a long history of frustration with addressing the limitations of the parties involved in deficit-model science communication, direct evaluation and intervention at the textual level may be a novel and more practical means of addressing (if not by any means solving) the problems of the broader science communication project.

**Popular Science Texts**

One area of communication of scientific facts and process (if not science communication proper) that could bring doubt to the general claim that “science communication is not done well” is the genre of popular science books. Popular science literature is a promising domain of inquiry for potential models for quality science communication for three major reasons. First, popular science literature and its authors exert a transparent influence on operative cultural science narratives. For instance, Malcolm Gladwell's social science books and theories (Gladwell, 2000, 2005, and 2008) appear prominently online, from guest spots on sports websites such as ESPN.com (Schwartz, 2011;
Simmons, 2009) to references on popular music websites such as Pitchfork.com (Breihan, 2009\textsuperscript{10}, LeMay, 2007\textsuperscript{11}) to reactions on news blogs on *The Washington Post*'s website (Nakamura, 2011), the latter specifically in response to his ill-timed attempt to apply his "tipping point" theories to the possibility of internet-fueled political revolution (Gladwell, 2010). Major news sites such as The Guardian include casual allusions to Dawkins's selfish gene concept (Kent, 1999). John Tooby's and Leda Cosmides's popular explanations of human behavior as a strict product of Paleolithic evolution (Tooby et al., 1992) explain marital infidelity on ABC.com (Ciarci-Levy, 2008) and the American obesity epidemic on Time.com (Bjerklie & Lemonick, 2004). Anecdotally, ideas in popular science books become fodder for the cocktail party and radially propagate in the non-science-expert-but-interested community. Brian Greene's speculations on string theory (1999 and 2004) lose their source via a veritable telephone game and end up canonized as pop cultural facts about the universe. That millions-sold general audience science books influence a subset of the lay public’s scientific literacy is uncontroversial; exactly how and what they do remain murky.

Second, that murkiness is largely due to the problem that popular science literature is a topic that has been under-emphasized by science communication scholars. In a broad review of science communication literature, Michael Weigold notes that

\begin{quote}
[Although largely ignored in mass communication scholarship, general audience science books may play an important function in the]
\end{quote}

\textsuperscript{10} "And it helps that the guys in the band really know how to play their instruments. Dave Navarro has put in his Malcolm Gladwell 10,000 hours playing..."

\textsuperscript{11} "But one thing I worry about is that Malcolm Gladwell tipping point..."
popularization of science. Such books may represent the public's only sophisticated encounter with physics, evolution, language ... or scientists. The popularity and prevalence of excellent books on science topics suggest that there is an audience interested in science issues (2001).

Weigold goes on to suggest important research questions for general audience science books including identifying their readers, characterizing the political opinions and interests of the readers, evaluating what they learn, and judging the quality of the science in the books (ibid.). A literature review reveals scant response to Weigold's suggestions; among the papers that cite Weigold's work, the closest to the topic are Svein Kyvik's study of science popularization by Norwegian university faculty via popular articles (2005) and Peter Bentley and Kyvik's follow-up multinational study of the same domain (2011).

Weigold's questions remain largely unasked, let alone answered. This is perhaps due to their relative intractability as study questions, all of them requiring large-scale empirical surveys and quantitative heroics to control factors influencing what readers may learn / retain from these texts. They would also consist of the sorts of simplistic before-and-after snapshots – what did this missive of science communication do to the reader? – referenced above. I propose starting with the additional, more tractable and basic question of what are these popular texts: what do they contain, what assumptions of audience do they make, and what rhetorical techniques do they employ? There is a vague notion that popular science is science "translated" or "dumbed down." To gain a concrete notion of how popular science texts work requires a deep probing and understanding of their
mechanics and a detailed analysis of their contents, something more nuanced than the typical claims of the successful texts being "clear" or "well-written."

Third, studying popular science communication texts written by the experts themselves seemingly eliminates some of the major concerns surrounding science communication’s general ineffectiveness. For one, there is no issue of ill-prepared journalists or poor science-journalist interaction; these are (publisher-evaluated, edited and sometimes peer-reviewed) messages relatively straight from the horses' mouths. Two, and more importantly, this is not science communication suffering from the stereotypical communicative incompetence of scientists. The book jackets of Stephen Pinker, Richard Dawkins, Sam Harris, Brian Greene and Stephen Hawking are littered with praise for the accessibility of their writing and their ability to express complex ideas in clear, concise and engaging ways. If there are any scientists able to communicate, these appear to be they.

Admittedly book jackets may not be the best place to seek unbiased evaluation. But whatever faults other evaluations of these authors’ works might claim, they are generally not complaints about clarity, and alleged errors these authors make are found in aspects other than the communicative characteristics of the texts. It seems that is indeed the case that there are successful texts involving the communication of scientific facts and / or process that have different aims from the broader science communication project. I hypothesize that these texts do contain elements worthy of imitation for purveyors of the broader science communication project, and that one text in particular – largely by virtue
of its the-bar-is-set-high attempt to communicate scientific complexities on a topic considered by many, particular those in lay audiences, to be well outside the purview of science – is an interesting candidate for potential imitation\textsuperscript{12}.

**Sam Harris’s *The Moral Landscape***

*The Moral Landscape* (2010) by Sam Harris, a philosopher, neuroscientist and popular writer who plays a frontline role in the American pro-science intellectual group The Edge Foundation\textsuperscript{13}, provides an exemplary case study for an analysis of this “alternate” brand (see below) of science communication. Harris is perhaps best known for his anti-religious polemic *The End of Faith* in which he argues that religious interpretation of the natural world is not only incorrect but deleterious to human progress (2004). Harris's notoriously antagonistic position serves to highlight the factors affecting science communicators when navigating a largely religious popular audience. He further exemplifies The Edge Foundation's general stance that scientific inquiry – for Harris, a variant of neuroscience – is the only way to appropriately understand the world, another controversial position that mitigates communication with the public.

\textsuperscript{12} I should note that the entire concept of my being able to evaluate any aspect of a text as imitation-worthy presupposes that I have some concept of what kind of science communication counts as “good” in the first place. As noted at the end of the section entitled The Broader Science Communication Project, I do hold ideas of what constitutes good communication above and beyond the clarity needed for increasing scientific literacy. Meta-communication regarding science’s importance, humility with regard to science’s capacities, and authenticity in address are integral elements of communication in service of the broader project; therefore, for the purposes of their imitation-worthiness with regard to the broader project, popular science texts also ought have these features.

\textsuperscript{13} Labeling The Edge Foundation as “pro-science” is a bit of an understatement. Founder John Brockman describes the membership of The Edge Foundation as constituting a “Third Culture” beyond C.P. Snow’s distinction of intellectuals in the First (strict humanities) and Second (strict science) Cultures that characterized intellectuals of the mid 20th century (Brockman, 1991; see also Snow, 1963/2008). He goes on to claim that this Third Culture “consists of those scientists and other thinkers in the empirical world who, through their work and expository writing, are taking the place of the traditional intellectual in rendering visible the deeper meanings of our lives, redefining who and what we are” (Brockman, 1991). The effect is that The Edge is not just pro-science but also anti-all non-empirical modes of inquiry.
It is also insufficient to understand Harris’s work without the broader contextualization of Harris’s prominent participation in the New Atheism movement. Harris has been an outspoken proponent of an atheistic materialist worldview that should be understood not just on the basis of its intellectual content but also as a social force in organizing the kinds of justifications and rationale for behavior that “count” in public discourse.

Notably, at times it is unclear whether Harris intends to engage in public debate or to just browbeat religious opponents and rabble rouse secular (and scientific) supporters such that opposing voices are intimidated and non-secular, non-scientific rationales rendered insufficient. Harris is an intellectual combatant in that he “takes all comers” and doggedly seeks conflict in his public intellectual life. The weight he carries as an author is far more derived from this public reputation as a polemicist (and from his best-selling *The End of Faith*) than his reputation as a scientist; he in fact has a mere two peer-reviewed scientific publications against the backdrop of his hundreds of pop-intellectual essays and blog-posts (Harris, 2013).

The science of *The Moral Landscape*, then, can only be fully considered in light of its political project of denigrating religion and pushing an atheistic secular agenda. There is definite room for doubt that Harris intends to communicate science at all. Despite his self-described projects within *The Moral Landscape* and elsewhere, Harris can be construed as engaged much more in an effort to alter the political landscape of what counts as evidence and good reasons rather than making sure anyone in particular

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14 As noted, Sam Harris, Richard Dawkins, Christopher Hitchens and Daniel Dennett are the most prominent authors associated with the early 21st century New Atheism movement; they have jokingly self-identified as “The Four Horsemen of New Atheism.” (Hooper, 2006)

15 As one of my committee members, Richard Creath, put it, Harris is a would-be intellectual gladiator.
understand what the scientific reasons for his stance are. This raises questions about how literally one ought to take Harris\textsuperscript{16} when evaluating what his intended purpose actually is, though this again does not bear on how his literal science communication may serve as a model for clarity of communication for the aims of the broader project.

\textit{The Moral Landscape} consists of an extended, adamant argument that morality is best understood (really, only understood) via scientific empirical inquiry. Harris uses a wealth of examples from biology, neuroscience and psychology as evidence for the primacy of a scientific interpretation of morality. The message is overt; even the book jacket sports a claim that the book explains "how science can determine moral values" (Harris, 2010). The text extends this to argue that science not only can explain moral values but should completely replace the traditional moorings provided by philosophy, theology and religion. The aggressive tone of the text is extreme but helpful for my purposes in that it provides such an obvious yardstick by which to measure other efforts at explaining the role that science can play in buttressing morality. It also serves as an example of strident, emphatic science communication with a clear capacity to send ripples through the popular culture and affect the broader project’s domain of communication. The rhetoric is an especially clear articulation of the position that materialist atheism is compatible with meaningful human existence. This position runs counter to that of the majority of an American popular audience; the book, then, serves as a nice example of particularly difficult science communication of a topic that is integral to everyday life.

\textsuperscript{16} And given the aforementioned requirements of authenticity in science communication that I have articulated for the broader science communication project, this gives us another reason to believe (see below) that Harris is engaged in an alternate project. It also raises the very likely possibility that aspects of his communication technique that I identify as deleterious for the purposes of the broader project may be entirely appropriate and successful for the purposes of his tacit "landscape-manipulation" project.
The scientific treatments and explanations of ethics strike me as particularly fertile ground for delimiting the dynamics of popular science. Philosophers have attempted to ground ethics via non-theological inquiry – e.g., Kantian rationalism (Kant, 1797/1993), Humean emotivism (Hume, 1740), Jamesian pragmatism (James, 1890/1998), etc. – and numerous scientists and philosophers have attempted to ground ethics via evolutionary or neurological argument (e.g., Flanagan, 1996; Glannon, 2007; Prinz, 2007; Ruse, 2006; McShea & McShea, 1999; Dennett, 1996; Joyce, 2001 and 2006; Churchland, 2011; Harris, 2010). But for most Americans, ethics and morality remain under the traditional auspices of theological and religious explanation (Attridge & Numbers, 2009).

Contemporary popular attempts to ground ethics strictly via science and to inform the public of current scientific understanding of those ethics face serious obstacles in gaining audience with a large portion of the population. For those espousing materialist and/or atheist worldviews\(^\text{17}\), the challenges are more severe and include the need to "win over" the audience in addition to conveying information. One of the long-standing explanations for the failure of the broader science communication project is the lack of receptivity of the audience. Science communication regarding ethics that succeeds, then, must somehow be meeting this challenge of receptivity, or, as I argue is the case in *The Moral Landscape*, appearing to meet it while actually dodging the challenge entirely by alienating members of the popular audience it would be difficult to reach.

\(^{17}\) And Sam Harris is most definitely an author espousing both materialism and atheism.
The Alternate Project

As noted above, experts engaged in the broader scientific communication project are directly engaged in the project of communicating scientific facts / process with the aim of promoting public science/-tific literacy and the aforementioned benefits thereof. In *The Moral Landscape* (and more generally), Sam Harris is not engaged in these pursuits. Across *The End of Faith*, *Letter to a Christian Nation*, and *The Moral Landscape*, Harris argues for the inadequacy, wrongheadedness, and danger of religious worldviews. His overarching project aims to spread secular values (and adamantly reject if not outright eliminate religious values) by arguing for the supremacy of a rational, scientific approach to understanding the world. In *TML*, this anti-religious polemic takes the form of a philosophical argument that uses science as evidence; while it does not have “science communication” as its primary intent, it necessarily communicates about science in making its argument.

In other words, Harris communicates scientific facts (and to some degree, process) not to educate publics, but to support his arguments. As such, the facts’ role is not that of information to be understood; the role is that of evidence to be believed and to be taken as true so as to engender acceptance of an argument. Harris, of course, is incentivized to communicate these ideas clearly and make sure that his audience understands them. But this is not to improve the broader science/-tific literacy of publics, rather to ensure that his audience members, whoever they may be, understand the science enough to take it as
bona fide evidence and thereby accept the anti-religious argument it serves.

The type of science communication that *TML* is engaged in, then, is not the same as that of the broader science communication project. It represents an alternate project with different goals, the success of which would seem to be measured by the number of readers compelled by the argument for supplanting traditional approaches to ethics with scientific approaches rather than the number of readers who would actually be able to understand or explain those scientific approaches. By virtue of the nature of the role of science in this form of argument – that of points of evidence – the focus falls largely on scientific facts as opposed to process. As opposed to efforts at improving science literacy, though, the facts are means to an end (and not the sort of knowledge end advocated for by the broader project proponents of science literacy). For the rhetorical purposes of *TML*, then, science has instrumental value, a veritable court proceedings list of Exhibits 1A through 27C. And while *TML* has inspired quite a few rebuttals as to the coherence of Harris’s argument and the relevance of the evidence, there does seem to be ample opinion that the presentation of those exhibits is clear (Appiah, 2010; Blackford, 2010; Dawkins et al., 2010; Nagel, 2010).

Harris’s alternate project *incidentally* communicates science – not through pure accident, of course, but without the sort of educational motivation that is apparent in the broader project. Even without it as a focus, though, the alternate project may in course achieve

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18 It is worth noting here that anti-religious polemic and scientific evidence are not invariably conceptually intertwined. It may be empirically true that the best kinds of anti-religious polemics use science as support, or that the sorts of people motivated to engage in anti-religious polemics are motivated to do so by their own scientific understanding. However, the connection is not absolutely necessary; Harris’s own *The End of Faith*, for example, criticizes religion on secular humanist grounds without delving into scientific evidence to nearly the extent that *TML* does.
this education. For my purposes, the techniques Harris uses to render his evidence so clear may be scavenged by the broader project and put to more direct efforts at educating lay publics.

Finally, though they plainly differ, Sam Harris’s explicitly stated goals have an interesting relationship to the goals of the broader science communication project. As noted above, the broader science communication project’s aims include an element of “scientific understanding for its own sake,” but otherwise focus on scientific knowledge as a means to social utility. Science communication is fundamentally important because of its capacity to enable a scientifically informed populace to make better decisions, practice better governance, and ultimately lead better lives across a variety of axes and by a number of metrics. The broader science communication project is in this sense a public betterment project that focuses on the improvement of the scientific knowledge of individuals as the means to achieve that betterment.

The Moral Landscape reports similar downstream aims. Lives of maximal well-being, maximal potential for flourishing and maximal happiness are all trumpeted as moral apices throughout the book. But the orientation to achieving these goals differs importantly. This is not to state that Harris denies the value of the broader science communication project; there is little doubt that Harris would approve of a more scientifically informed public. Harris himself is the CEO of Project Reason, “a non-profit foundation devoted to spreading scientific knowledge and secular values in society” (Harris, 2010), so it is apparent that informing publics plays a role in his mission. The
difference is that though it is listed first in the preceding quote, scientific knowledge takes a back seat to secular values. If scientific knowledge is helpful in pursuing these lives of maximal well-being, etc., it is just in that it serves to bolster secular values and, simultaneously, displace religious ones. Scientific knowledge *per se* is not emphasized. Unsurprisingly, throughout *TML* these secular values and anti-religious screeds dominate the text, leaving science in the aforementioned role of evidence to support an argument rather than evidence to be explained/understood in the foreground.

The broader science communication project, perhaps obviously, makes no such commitment to the value of scientific knowledge being tied to its secular or anti-religious nature. The knowledge has inherent value of the “for its own sake” nature and *relatively independent* instrumental value at least in that it need not realize its social utility by way of secular and anti-religious values. So efforts in the broader project maintain the freedom to be non-committal with respect to religion (except in obvious cases of conflict, such as the age of Earth, the validity of evolution, etc.). This on face allows for pursuit of public science literacy without the overt barrier of selling anti-religious values to non-receptive religious publics.

Harris, plainly, does not have this luxury. Perhaps just as obviously, for Harris, secular/anti-religious values and science are necessarily intertwined. Science effectively is *a* if not *the* secular value such that science and religious values are “obviously incompatible” (Harris, 2010) and that a scientific worldview (a properly conceived one, per Harris) is simultaneously an anti-religious one. Harris spends a good portion of *TML* deriding well-
known scientists (e.g., Francis Collins) for claiming that religious and scientific
worldviews are compatible or that they represent orientations to different, non-
overlapping magisteria (Gould, 1999). It seems then that the area of emphasis is the
correct scientific – meaning secular / anti-religious – orientation (which, per Harris, even
people like Collins lack), not scientific understanding (which professional scientists who
are religious obviously have). The conclusion is that for Harris and the alternate project,
science/-tific literacy is actually an inadequate goal when promoting his particular secular
/ anti-religious worldview is the real aim. Presumably promoting science/-tific literacy (or
spreading scientific knowledge, as Harris puts it) plays some role in promoting Harris’s
secular / anti-religious worldview and its values, but as discussed below, this role appears
to be secondary.

There is another interesting aspect of the role of science in the comparison of the goals of
the broader project and those of the alternate project of TML. For the broader project,
science/-tific literacy enables individual laypeople, either through specific uses of
scientific know-how or general application of sharper critical skills, to lead better lives.
For TML, the claim is that science, and more precisely scientific experts, can tell us what
those better lives ought to be.

I mention this here because when framed this way, the two projects appear to imagine
different roles for science in facilitating this widespread betterment of lives. The broader
project conceives of science/-tific literacy as a tool for lay individuals to use for
themselves. TML conceives of science as a tool that scientists to use to generate
normative directions on “the moral landscape” for the whole and thereby capacitate better possible lives for everyone. In the TML conception, lay people ultimately benefit from scientific knowledge, but it remains expert scientists’ knowledge, not their own. There is nothing particularly unusual about this arrangement – I certainly don’t need to understand the dynamics of combustion in order to benefit from driving a car – but it does maintain firm boundaries between experts and laity. And it further distances the alternate project from the broader one by re-emphasizing that the need-to-know lies solely with the experts; science is broadly construed as an enterprise that provides for the laity, not necessarily a process to be understood by them.

Surveying / Criticizing the Moral Landscape

In *The Moral Landscape*, Harris is clearly not engaged in the broader science communication project. As I discuss in detail below, from the opening pages Harris is engaged in an anti-religious polemic that this time brings scientific evidence, including his own neuroscientific research using functional magnetic resonance imaging (fMRI) on the brain structures involved in belief, to bear on questions about morality traditionally considered to be in the purview of theologians and philosophers. He incorporates his brand of clear science communication into an alternate project, one that emphasizes that science, particularly psychology and neuroscience, should supplant religion as the authority on moral matters. It is not just that science can describe how humans do think and behave morally, but that it can prescribe how humans ought to think and behave
morally in order to best maximize human well-being (and the well-being of other sentient creatures).

While *TML* is rightly categorized as a popular science book, it cannot be overemphasized that it is very much first an anti-religious argument that happens to use scientific evidence as a prominent justification for adopting the anti-religious worldview Harris endorses. I.e., the “science” is not there for the sake of educating a broad public audience\(^1\). All invocations of science in *TML* are in support of its thesis – that religion is an incoherent worldview for informing our moral perspectives and that science will some day uncover true moral perspectives – and, at least on face, are aimed at compelling the reader to adopt this secular / anti-religious worldview. This alternate project is secular / anti-religious before it is scientific, and though Harris argues adamantly – and primarily philosophically – that science is the place to turn as one turns away from religion, on the whole the text leaves a psychological / neuroscientific account of ethics quite under-described. This is to say that the science in *TML* is efficiently and clearly communicated, but since engendering popular understanding of psychological / neuroscientific ethics is not the direct aim of the text (so much as support for the polemic is), the text falls well short of an educational effort. In sum, one imagines that a text on neuroscientific ethics coming from the broader project would differ quite a bit from *TML*\(^2\).

\(^1\) Indeed, as I’ll argue below, it is not clear that *TML* is aimed at a broad public audience at all, let alone at facilitating its science/ific literacy.

\(^2\) Patricia Churchland’s *Braintrust*, for example, represents such an effort at conveying a survey-level understanding of the contemporary state of neuroscientific accounts of ethics in popular text. Among other things, it is quite dramatically different from *TML* in the adamancy / zeal in its account of the neuroscientific community’s confidence in their understanding of neuroscience and ethics.
I suppose one could criticize Harris for not participating more directly in the broader project. There are concerns (see e.g., Mooney & Kirshenbaum, 2009) that Harris and other proponents of the “New Atheism” are deleterious to the efforts of the broader project when they make their science-based arguments in the form of anti-religious screeds. But for my purposes, criticizing TML for not realizing the aims of the broader science project would be absurd. The attraction of TML is its reputation of clear science communication; that it does so with aims other than the ones emphasized in the science communication literature does not count as a strike against it. Indeed, if TML communicated science clearly and realized the stated goals of effectively communicating to and informing broad lay audiences with the sorts of focus that the broad project emphasizes, then using TML as a model for science communication would be quite straightforward. Again, the tasks I mean to emphasize here are an evaluation of literary strategies that make TML’s communication effective and how those strategies can be steered toward meeting the goals of the broader project. That TML does not already meet these goals is a given, so criticism on this basis alone is ultimately a criticism of the motivations and effects of Harris’s alternate project, not a criticism of the execution of TML itself, which ultimately should not be faulted for failing to meet goals it did not pretend to have.

In fact, for the purposes of this dissertation, it would be absurd to criticize Harris or TML for being incorrect. For one, I would have to stand in a long line to do so; Harris’s strident voice, adamant stance, controversial claims and charges, etc., have drawn a long
list of critics and detractors (Jollimore, 2010; Appiah, 2010; Robinson, 2010; Nagel, 2010; Blackburn, 2010; Ohr, 2010)\(^{21}\). The strengths and flaws of Harris’s arguments and the shortcomings of his interpretation of the science he cites are well-trod ground, so to join that fray and plant my feet firmly in the pro or anti-Harris camps would constitute gratuitous piling on. Moreover, while challenging whether the science communicated is correct (accurate, reliable) is a worthwhile project, the argumentation required necessarily steps into the contradictory interpretations of experts and moves away from the popular domain in which the text itself participates. In other words, insofar as I am interested in the domains of communication between experts and laity, I am not interested in the intra-experts communication and confrontations over technical aspects of the science communicated. It seems to me that, simply put, a scientifically complicated or highly technical idea can be communicated clearly independent of whether it is later demonstrated to be false. The strength of Harris’s arguments, from this perspective, lies not in how accurate they are but in how well they get across the interpretations of a highly technical domain like neuroscience to a lay audience.

My aim here, then, is not to contest or denigrate Harris’s purposes, claims, arguments or evident character within the pages of *The Moral Landscape*. My aim is to delineate the aspects of the content of *The Moral Landscape* that contribute to its purported clarity and quality of science communication, regardless of whether the science being communicated is compelling, relevant, consensually agreed upon, or in any sense factually correct. The

\(^{21}\) Harris likewise has his supporters (Dawkins et al., 2010); my point here is not to present him in a negative or positive light but just to illustrate that while one could quibble or combat his arguments, I am more interested in evaluating their mechanism for achieving clarity than, say, their mechanism for being more or less true.
question that drives this chapter is insofar as *The Moral Landscape* represents a form of clear, good science communication, what are the characteristics that make it so?\(^{22}\) And furthermore, what can participants in the broader science communication project glean from the techniques employed in *The Moral Landscape* to aid the clarity of their own science communication and take steps toward rectifying the long-standing problem of science communication being “not done well?”

**Lessons from The Landscape**

This latter question is complicated, because one can imagine several distinct categories of lessons one might glean from a work with aims and topics that intersect one’s own but that do not entirely match it. For the purposes of clear organization and managing scope, I will divide these lessons into two broad categories: positive, imitable aspects and negative, undesirable aspects. The negative aspects are further described in terms of two normative reactions. First, participants in the broader science communication project must take these negative aspects under consideration in their own communicative efforts (in that the influence of these negative aspects should be accounted for). Second, broader project communicators must decidedly differentiate their own writing from aspects of

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\(^{22}\) Again, while I utilize a grounded theory approach and allow these characteristics to emerge through the process of textual analysis, it is not as though I do not have standards to which I am holding *The Moral Landscape*. As mentioned in footnote 12, I am counting science meta-communication, some degree of humility and explanation regarding the limitations of science, and authenticity in the connection between intended purpose and statement of that purpose as exemplary criteria for science communication generally and for imitable aspects of popular science texts in particular. I recognize that as Harris’s project differs from that of the broader science communication project in significant ways, it is not exactly surprising that *The Moral Landscape* largely lacks these features. Again, as the idea was to investigate *The Moral Landscape* as a model for the broader project, these are the standards to which I would hold *The Moral Landscape* as a model, not necessarily the standards I would use to evaluate whether it were accomplishing Harris’s alternate project.
TML’s rhetoric in that its negative aspects undermine the broader project to its core and simply must be avoided.

**Positive Lessons: Aspects to Imitate**

The aims of *The Moral Landscape* are at odds with the aims of the broader project, and the argument therein has its share of detractors. But even staunch critics note that *TML* clearly presents its scientific evidence (Appiah, 2010; Blackford, 2010; Nagel, 2010). As noted, one of the primary concerns for science communication in the public domain is that it is “not done well” (Treise & Weigold, 2002), and at least one of the reasons put forth is that scientists themselves lack the wherewithal (and or incentive structure to promote the development of the wherewithal) to convey complex ideas in language accessible to a broad popular audience.

Harris, by all appearances, does not have this problem. A biography of Sam Harris is beyond the scope of this chapter (and unnecessary for examining the textual content of *TML* besides), but a brief explanation is that Harris started as a popular writer in the religio-social domain and later pursued a PhD in neuroscience. His career pattern is, in essence, inverted from that of the typical popular science author, so he had the opportunity to “develop his writing chops,” as it were, before entering the domain of academic science that alleged interferes with the development of public communication skills. Harris reflects this inversion of roles – he is a writer first, scientific expert second –
when he has self-identified as a popular author ahead of his role as neuroscientist\textsuperscript{23}. This suggests that Harris has benefitted as a popular science writer from the particular incentive structure of his career. It stands to reason that there are communicative aspects of his writing that, again despite the differences in goals and purpose of his alternate project of science communication, could benefit the participants in the broader project. My initial hypothesis with regards to these categories of communicative aspects was that \textit{TML} would offer much to imitate.

My multiple close readings of \textit{TML} have largely confirmed this hypothesis. \textit{TML} engages in many techniques – to be covered in detail below – that, while they may strike authors engaged in the broader science communication project as incorrect, inappropriate or even offensive in their execution, offer a framework of argument that could stand to benefit public science communicators as they strive to navigate the complexities of exchanging complicated ideas with audiences of varying levels of expertise.

\textbf{Negative Lessons 1: Aspects to Take Under Consideration}

While some communicative aspects of \textit{TML} may warrant qualified imitation, others need to be confronted by participants in the broader project, and not simply in terms of inclusion in or exclusion from their own work. One standout feature of \textit{TML} is its

\footnotesize{\textsuperscript{23} I witnessed this at the Origins Project “Origins of Morality” conference at Arizona State University in November, 2010. It was striking that in a room full of experts on the science and/or philosophy of morality, including Peter Singer, Richard Joyce, Joshua Greene, Patricia Churchland, Simon Blackburn, and Jesse Prinz, Harris casually introduced himself as “a popular author.” I cannot comment on the irony intended in that, but the introduction in context was probably appropriate, given that Harris’s list of publications as a public intellectual is extensive, while his publications as a scientist are few, particularly relative to that group.}
persistent attacks on religion; the reason to take such a feature seriously is its potential effects on audience receptiveness for science communication generally. This might be seen as simply “a thing to differentiate (from),” and true, particularly in the U.S., it seems imprudent to frame attempts to communicate science to a largely religious audience with the premise that religion, broadly construed, and its adherents are obviously wrong and/or stupid. This seems uncontroversial, and insofar as the harshness of tone adopted in \textit{TML} towards religion and adherents is directly a reflection of the different science communication project in which \textit{TML} is engaged, this would seem to be an instance where the difference in aims of the projects would indicate that a different tone towards religious audience must be adopted.

The reason I construe this (and other aspects of \textit{TML}) as “aspects to take under consideration” is that the popularity of Harris and \textit{TML} do more than represent an instance of science communication that happens to use antagonism towards religion as a rhetorical device. The ardent use of this device links capital \textit{S} Science and emphatic anti-religionism such that the milieu of science communication itself is altered. What “science” and what “science communication” signify become altered to be inherently anti-religious. These individual (very “loud,” widely popularized and therefore disproportionately representative) anti-religious efforts at science communication predispose “religious” audiences to resentful feelings of antagonism and alienation towards science and science communication generally. Therefore, such aspects of communication are not merely to be avoided and/or differentiated from – indeed, the adamancy and vitriol of the “religion/science” wars is reinforced by commentary like that
of TML’s such that a science communicator engaged in the project should avoid even a whiff of anti-religious sentiment if hoping to connect with wider American publics – but they are also to be positively accounted for in broader science communication endeavors (e.g., for this example, one might be compelled to offer something of an olive branch to religious audiences or take other measures to separate the major science communication project from Harris’s in order to facilitate reaching “religious” people in the extant science communicative context).

**Negative Lessons 2: Aspects From Which to Differentiate**

The third category of “aspects from which to differentiate” could be seen as trite if not problematic since in the case of Sam Harris, it could be claimed that this is simply low-hanging fruit. In addition to being notoriously clear and straightforward, Harris is notoriously caustic and borderline obsessive (Hedges, 2008; Foster, 2010) in his project to denigrate religion. And the normative claim that participants in the broader science communicating project (who take it as their mandate to reach and educate audiences, which as a matter of course contain a majority that is these “religious” members) should not begin by sweepingly denigrating widely-held belief systems seems to be more of a trivial comment regarding decorum than a thesis that requires textual analysis and evidence. This point is well taken. I hope, though, to demonstrate that TML is engaged in “aspects from which to differentiate” beyond these exercises in common discoursesy. In one sense, this “beyond” means that there are particularities in the way in which this discoursesy is executed that are important to notice. For example, there seem to be salient
differences between an argument that a religious perspective is wrongheaded and an argument that a religious perspective is so obviously wrong-headed that its proponents must be stupid, evil, and undeserving of a voice in social discourse (Harris, 2010). Being able to engage the former aspect and not the latter could be relevant to science communication, particularly in the domain of scientific interpretations of ethics, and therefore the details of “differentiation from” become something more than simply not being nasty.

**Popular Science Communication?**

In another sense, though, *TML* is engaged in aspects of literary technique that should be differentiated from in a much stronger sense. This is the major thesis of this chapter and my assessment of *TML* as a whole. Despite the fact that Harris self-identifies a popular science writer and despite the fact that *TML* is a *New York Times* best-selling non-fiction book that purports to explain “How Science Can Determine Human Values,” there are important ways in which the book deviates not just from the aims/purposes of the broader science communication project, but from the very concept of “science communication” embedded in that project. I.e., *TML* is not actually a work of popular science communication. On its face, this is an absurd statement, as the book is transparently “popular” and “communicating science” by all kinds of reasonable definitions of those terms. The motivation behind this claim, though, has less to do with strict definitions of terms and more with notions of audience. Throughout *TML*, there are indications that the audience is not intended to be, nor could it possibly be, the same sort of lay audience
described in the (however limited) deficit model that underpins the broader project of science communication. The explicit limning of audience, the mode of scientific description, and the implied expectations of background scientific knowledge employed in *TML* conspire to indicate that the intended audience for this work must be

1. far more knowledgeable about psychology, biochemistry, neuroscience and anatomy than a purported scientific “laypeople” could be described as being
2. far more restricted in scope and much more of a minority than the typical monikers (e.g., “the American public”) could be referring to
3. far more predisposed/biased to be persuaded if not plainly already convinced of the book’s conclusions before the book’s argument is delivered.

The aspects of *TML* that engender this highly restricted audience, then, need to be avoided by participants in the broader project of science communication for three corresponding reasons. One, the requirement that the audience already have a substantial body of background knowledge in order to understand the import of contemporary scientific findings defeats the purpose of broader expert-to-laity communication in the first place. This form of communication of complex information could be exceptionally clear when the audience has an already established scientific and conceptual framework into which to incorporate the new information, but for those lacking this kind of framework, the same effective communication could be so much gibberish. E.g., if one has no established sense of what role hormones play in emotional regulation or what the psycho-developmental concept of “social attachment” refers to, it is not particularly clear
what “social attachment … is regulated by the hormones vasopressin and oxytocin” (Harris, 2010, p. 9) is supposed to mean or what it is supposed to explain.

Two, given that the portion of the public that lacks some or all of this extensive framework is largely the intended target of the broader scientific communication project, it is unwise to overtly exclude the necessary background framing that capacitates incorporation of this new information in a meaningful way. There is no doubt that a scientifically lay audience will be heterogeneous with regard to levels of background knowledge and complexities of extant frameworks. And it’s likewise undoubtedly the case that some members of such a lay audience will indeed be able to understand and incorporate concepts and/or facts presented at this level without more explicit attempts to ground, e.g., what “social attachment” refers to and why it is noteworthy that vasopressin and oxytocin regulate it (and how a hormone regulates any behavior or phase of development more generally). This subset of laypeople may merely be “scientifically lay” by virtue of their lack of exposure to these scientific concepts in particular and easily have the wherewithal to grasp such foreign concepts by analogy to areas they do already know (or by developing frameworks to flesh out these new concepts by other means – e.g., looking up hormone regulation in a text concerned more directly with explaining hormone regulation – though it would seem somewhat onerous and / or inconsiderate on the part of the communicator to require his/her audience to consult other, more complete texts to understand his/her own attempt at popular science communication).
Still, at the risk of appearing to advocate a “No Science-Communicatee Left Behind” strategy, it seems that, within reason, defaulting to a strategy that makes some effort to incorporate background explanations to contextualize concepts/terms for those with minimal frameworks would be appropriate. This isn’t a mandate to treat every piece of science communication as though it needed to start from the absolute ground up, but the opposite end of that continuum – one that treats niche concepts and names of hormones as though they were commonplace knowledge – seems inimical to anything that can coherently be described as an attempt at reaching epistemically diverse audiences with restricted expert information. So communicative techniques (or, in this example, their absence) that overtly obscure meaning (per above) for particular audiences will also place de facto restrictions on audience that interfere with attempts to reach a broad public and, as such, ought to be avoided for both reasons.

Exclusion of background knowledge, though, is not the sole device by which TML restricts its audience, and its omission of contextual information is not the only technique from which it would be good for more broadly oriented science communicators to differentiate. As I detail below, much of the topical dichotomization in which TML engages (e.g., ambiguous “they/us” designations, “facts/values,” “belief/disbelief,” “religion/science,” “liberals/conservatives,” “normal/sociopath,” etc.), while quite effective in organizing and conceptually clarifying the central argument regarding the role of science in morality, is accompanied by dichotomous characterizations of political, spiritual, intellectual, dispositional, etc., orientations in the world that invariably describe potential audiences for the book itself. I demonstrate this below, but for the purposes of
this chapter, suffice it to say that the effect of repeated claims along the lines of “the world consists of group A and group Not A; group A is obviously wrong, and the vast majority of group Not A is also obviously wrong except for this small subsection that thinks thusly” gives the dizzying sense that an exceedingly small portion of potential audiences is grasping the world in an acceptable fashion. (In its most extreme form, this dichotomous characterization along scientific/non-scientific axes ends in a claim that the bulk of scientists themselves are not being scientific, which creates some mystery as far as which representative of Science, exactly, is going to determine values for the rest of us). That this formulation of argument is made so adamantly across so many axes of orientation (such that any individual reader could be a member of multiple categories of maligned groups) and that TML makes the explicit claim that wrongheaded persons are not worth listening to leave the distinct impression that the audience that will actually be permitted a speaking role at the proverbial table is a small “one” indeed.

Again, as I indicate in Chapter 2, the dichotomization heuristic is quite effective in garnering conceptual clarity for the purposes of TML’s central thesis. These dichotomies are unfailingly overly simplistic, but for the purposes of establishing a backdrop of “that which (concept X) is not” so that “concept X is this” is clear, the rhetoric succeeds. So this aspect of TML’s communication may well be worth imitation. But when the heuristic bleeds into descriptions of the book’s own (potential) audiences, the clarity of argument lends itself to a clarity of pointed attack against the reader him/herself. And this kind of literary aspect – one that carves up the readership to the point that only some small portion of it would seem likely to accept the insults and revisions of belief that
accompany accepting the argument – would seem to be the kind that scientists really intending to communicate to broad popular audiences ought to avoid lest they, too, carve up the popular audience until only a pittance of it remains.

Three, a foundational challenge of the broader scientific communication project involves conveying complex information to large, heterogeneous audiences in a clear / effective manner. But an equally challenging part involves a meta-communicative component in that those large, heterogeneous audiences must be compelled to find the message worth hearing and going through the effort of parsing in the first place. Per the deficit model, effort must be made to convince the lay audience that they are in fact at deficit with regard to a particular area of scientific knowledge / literacy and that this deficit actually matters (and further, that these communicators or modes of communication in particular are the appropriate ones to address the deficit).

As addressed above (and will be laid out in full in Chapter 2), some aspects of TML’s style of communication amount to omitting necessary contextual information for understanding the very science TML communicates. This and other extensive characterizations of dichotomized audiences serve to interfere with the ability of the text to compel readership from a broad lay audience on all of these fronts. Plainly, the degree to which the text over-assumes the background knowledge of a general audience will have a strong inverse relationship with the transparency of the text for that general

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24 Cf. 6. Scientific explanation and the meta-communicative component strike me as separate issues for successful science communication: effectively conveying the scientific facts and scientific process v. effectively conveying why these facts and process are important to understand, especially relative to other ways of knowing.
audience. Any omissions that obscure the message will obscure the value of the message, and these omissions will raise the burden of parsing it for these audiences, too. Again, in terms of the deficit model, while some of the means of communication may carry implicit information that a deficit exists for the reader – e.g., if I do not follow the claim that “belief is correlated with activity in the pre-medial frontal cortex” (Harris, 2010), I may conclude I have a deficit with regard to what brain activity represents – the significance of this deficit is not obvious without contextualization. The fact that these obscured facts are used alongside textual elements that, per above, could give the reader little reason to believe that he/she is to be counted among the “us” whom the text is addressing and inviting to have a voice in a wider social conversation about the role of science in morality, gives me plenty reason to seek fulfillment of this deficit elsewhere if anywhere at all.

The further strategy to be avoided would be engaging in the sort of “preaching to the choir” that the pre-knowledge requirements, audience restrictions and assumption of science’s importance and authority indicated in TML amount to. Hopefully it is evident that a text that requires an already strong science background and contains dismissive statements of widely held beliefs might lend itself to a readership that is already inclined to “attend church,” as it were, independent of any arguments delivered by the text. The additional concern for my purpose is the over-reaching assumption that the audience already believes that science, specifically neuroscience, is the appropriate tool to inform one’s approach to morality and/or ethics. This represents frank neglect of the meta-
communicative components necessary for capturing a lay audience in the first place, and this neglect is readily apparent in *TML*.

To be clear, this is not a criticism of *TML per se* in terms of its efficacy as an argument. As above, it would be somewhat absurd to criticize the text *solely* for failing to include the necessary elements of the broader science communication project of which it is not a part.\(^{25}\) My point here is instead to criticize *TML* as a usable model for the broader science communication project. I do not claim that it fails on its own terms (though it very well may), rather I claim that a science communicator pursuing the broader science communication project would fail were he/she to ignore the lessons (both of what to imitate and from what to differentiate) it stands to teach, particularly with regard to this issue of meta-communication. In this respect, *TML* provides ample examples of failure to provide argument for the supposedly obvious primacy of the neuroscientific endeavor *vis à vis* other intellectual approaches to ethics, and as such, fails to commit to the preliminary steps necessary to compel a lay audience to begin to invest in its argument in the first place. And that is the stylistic and strategic choice from which to drastically differentiate: rhetoric that indicates that the scientist need not even bother taking the time to give good reason for listening because the non-expert audience can be assumed to be on his / her side.

\(^{25}\) One could criticize the efficacy of the *TML* argument itself by arguing that *TML* ought to have contained more explicit arguments for the supremacy of neuroscience as a disciplinary approach to morality (instead of simply declaring by fiat that, e.g., “the primacy of neuroscience and other sciences of the mind on questions of human experience cannot be denied” (Harris, 2010). Such an argument would have necessarily contained more of a meta-communicative component at least in terms of expressing reasons why this instance of communication about the neuroscientific approach to ethics ought to be taken more seriously than other approaches (philosophical, literary, sociological, anthropological, etc.). One could also criticize Harris for taking on the “wrong” science communication project, but again, that horse has been adequately bludgeoned.
Conclusion

In this chapter, I have laid out the case for using *The Moral Landscape* as a case study for addressing concerns within the popular science literature about failures of the broader science communication project. As an effective popular science text that admittedly does not conform to the broader project’s aims, the text has promise for giving insight into textual elements that may assist participants in the broader project in conveying difficult and/or controversial science to lay audiences. However, I have also laid out arguments that *TML*’s considerations of audience interfere greatly with using it as a model for popular science communication because of its exclusion of wide swaths of audience and because of the assumptions of audience knowledge that seem to be key to facilitating its clarity. These problems of audience are so extensive as to prompt me to argue that strictly speaking, *TML* should not be considered an act of broad popular science communication at all. It was obvious that its aim was not directly to augment the science/-tific literacy of lay audiences, but the fact that the book cannot really be considered to be aimed at these audiences at all is somewhat surprising. The particular features of this text raise questions about the comprehensiveness of the taxonomy of popular science communication that the broader project assumes, given that to this point the division has been between expert communication and other. *TML* seems to indicate that finer divisions are necessary to capture all the aims and executions within the domain of popular science communication (these questions will be addressed more extensively in the conclusion to this dissertation).

These questions may seem like oh-too-familiar academic nitpicking about lumping and
splitting and arcane concerns about proper categorization (is a horse with no hooves still a horse?, etc.). I hope it is evident that the larger concern is the implied barriers for the legitimately practical and beneficial aims of the broader science communication project. If some of the primary examples of clear popular science communication – that of popular science books such as Harris’s – reliably ground their clarity in assumptions of extensive audience knowledge, this does not bode well for the capacity of other efforts to reach audiences that lack this background knowledge. This is to say nothing of the additional problems of reaching audience that aren’t already inclined to seek out popular science texts in the first place, who I think it would be uncontroversial to imagine are the same populations already in possession of this facilitating background knowledge. All of this may conspire to indicate that the broader science communication project is doomed from the outset.

That is a fairly pessimistic interpretation, and I could imagine that the reliance of popular science texts on audience knowledge could just incentivize redoubled efforts in widening the audience that has that background knowledge (via projects of education, in order to “get ‘em while they’re young,” as it were). Still, for the prospect of using popular science books as a generalizable model for effective communication, Harris’s over-reliance on a restricted audience is not in itself encouraging. It may mean that the barriers between the broader project and alternate projects such as TML are too large to overcome, and that the broader project can only attempt to account for the negative aspects of Harris’s participation in the communicative realm rather than focusing on the positive.
Chapter 2

TEXTUAL ANALYSIS – THE PROJECT AND SCIENCE OF THE MORAL LANDSCAPE

Chapter Summary

In Chapter 1, I lay out an argument for *TML*’s exemplary failure as a truly *popular science* communication text. In Chapter 2, I illustrate and support this argument with a close textual analysis of *TML*. This analysis emphasizes Harris’s overt statement of project and concept of “science” that he attempts to use as evidence for his argument regarding the supremacy of neuroscience in matters moral.

Introduction

This chapter features a close-reading based analysis of *The Moral Landscape*\(^\text{26}\). I first limn the statement of project in *The Moral Landscape* as well as the variant of science that it communicates. These two factors give better context to the textual aspects covered in Chapter 3 in that they support the notion that even by the author’s own framing, *The Moral Landscape* cannot be construed as a proper effort at popular science communication. This is because

1. The project is about arguing for science’s role in supplanting religious authority on moral matters and constructing a philosophical argument for how science can,

\(^{26}\) The block-quoted selections in this chapter are all taken from (Harris, 2010) and the page numbers refer to the pages in the hardcover first edition.
in the abstract, overcome the long held descriptive / prescriptive divide, not communicating an understanding of how science can or would do this *per se*.

2. The science presented alternates between an overly broad, rationalistic approach and a limited range of scientific disciplines (neuroscience and psychology), notably dismissing evolutionary accounts of morality. The range of neuroscience and psychology that “counts” is also quite limited as the text forcefully excludes descriptive explanations of behavior “done in the name of morality” which would seem to eliminate the vast bulk of moral psychology research that has actually been conducted thus far. *TML*’s engagement with this science, too, often devolves into engaging in point-by-point rebuttals of other scientists’ interpretations of their own research. These factors conspire to indicate that it is not scientific understanding that is being communicated, but Harrisian understanding of a sliver of that science.

The statement of project and variant of science, in combination with the negative aspects covered in Chapter 3, mean that while *The Moral Landscape* may still in a loose sense be a work of science communication, it is not at all a popular one in the sense intended by “popular communication to broad lay audiences” emphasized by the broader science communication project. Further, if this variant of communication in any way represents best efforts within popular science texts at “good, clear communication” – and this quality and clarity rely on the narrow range of science and narrow restrictions of audience indicated in *TML* - it casts a pall over the ambitions of the broader science
communication project’s ambitions to reach lay audiences with comprehensive and even-handed efforts at promoting scientific literacy. This latter point will be covered in more detail in Chapter 3. I conclude this chapter by briefly summarizing the context of TML’s project and science in preparation for detailing the textual efforts that execute and communicate them, respectively, in Chapter 3.

**Implicit Features of Harris’s Project and Science in The Moral Landscape**

From the first sentences of the introduction to *The Moral Landscape* – an account of the Albanian vendetta tradition of *Kanun* – it is apparent that Harris’s project is to apply science to morality not as a neutral means of explanation, description or prescription, but as an upending corrective for historical and religious accounts of morality as well as a dismissal of “moral relativism” theories of morality grounded in much of the work of 20th century anthropology. This overriding mission relies on at least two factors that give immediate reasons to doubt the integrity of the project as an effort as science communication intended for mass, popular consumption by broad audiences. For one, the framing – again, from page 1 – requires assumptions of dichotomizations of audience of “us and them” such that the target audience cannot reasonably be construed as a universal, broad lay audience. It is not entirely clear whom *TML* is referencing with either possessive pronoun²⁷ when it discusses “their values” being “inferior to our own” (Harris, 2010), but it is apparent that someone is being actively excluded by the orientation of

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²⁷ To pay well-deserved tribute to colleague and mentor Ben Hurlbut, “Who is the we?”

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project. The angle, then, is not an argument for an unbiased science that will give an empirical account of what is right and wrong, but a science aimed at fueling means by which “we” will declare “them” (along whatever axis) to be “objectively wrong.” Note that even sections of the text that acknowledge the potential inability of science to resolve classically intractable problems of ethics (e.g., weighing the interests of individuals v. groups in a consequentialist calculus) cannot help but reveal that the project of the text is not to portray how science can determine values or right from wrong, but how “we” might use science to tell “them” that “they” are not just wrong but that their system is “objectively terrible.”

The fact that it might be difficult to decide exactly how to balance individual rights against collective interests, or that there might be a thousand equivalent ways of doing this, does not mean that there aren’t objectively terrible ways of doing this. The difficulty of getting precise answers to certain moral questions does not mean that we must hesitate to condemn the morality of the Taliban—not just personally, but from the point of view of science. The moment we admit that we know anything about human well-being scientifically, we must admit that certain individuals or cultures can be absolutely wrong about it. (46)

My point here is obviously not to condone “the morality of the Taliban” nor Kanun (nor to highlight the problematic phrase “from the point of view of science” coming from a text that devotes so much space to disputing scientists’ interpretation of their own work). I include this quote here to indicate that the orientation of the scientific mission here is to demonstrate that others are absolutely in the wrong and that the project is therefore

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28 Even if this intended to be a fairly reliable dichotomization between a largely American readership and an Albanian minority that is not likely to encounter The Moral Landscape, this frank tone of otherization is maintained throughout the text across numerous axes – nationality, political orientation, religious affiliation, academic orientation, stance on abortion, etc. – such that this in-group / out-group framing becomes necessary to parse TML’s argument. And as noted earlier, the out-group is not insignificant and assuredly the actual majority of American readers, such that the fact that the very first paragraph of the book orients the reader this way is a waving red flag for the exclusion of out-groups to follow.
exclusionary by nature. The text as whole has a tone of presuming that there are things that “we” can declare obviously right and obviously wrong in terms that will equate to their to-be-scientifically determined capacity to facilitate and promote well-being, and that this scientific argument will bear more weight than whatever is making these right/wrong declarations so obvious in the first place. Science from the very start of the text is being placed in the position of inter-morality arbiter, and the dominant presumption in the text is that the moral communities other than “our own” are the ones that are wrong. This rhetoric has the structural advantage of using science to reaffirm what “we” already believe – that “we” are right – but the cost of this rhetoric is the near-impossibility of disentangling the argument from an attack on all those “others” such that the audience is limited from the outset.

The second factor that gives reason to doubt TML’s place as an effort at honest science communication with a broad lay audience is the thorough-going lack of meta-communicative argument within the text. I discussed this above in Chapter 1 in brief, but again, by meta-communicative aspect of science communication, I mean the responsibility for science communicators to not only communicate science effectively (clearly, understandably, usefully, etc.) but to provide some reasoning for why the communication is worth receiving in the first place: communication about the communication. Given the disruptive, upending central thesis of TML – that in instances of moral conflict where whole moral systems cannot be reconciled to agree on the right and wrong, better or worse courses of action in particular contexts, it is not religion, theology or philosophy but science that is the proper arbiter – it is utterly surprising to
find the repeated assumption that science just is this proper arbiter with no argument for why this must be the case. The obviousness of science’s supremacy is implicit in introductory claims such as:

… the primacy of neuroscience and the other sciences of mind on questions of human experience cannot be denied. Human experience shows every sign of being determined by, and realized in, states of the human brain. (7)

It seems inevitable, however, that science will gradually encompass life’s deepest questions (7)

These claims are levied without support and are problematic, not in the sense that they are necessarily wrong, but in the sense that they fail rudimentary requirements of science communication with an audience unfamiliar with the signs mentioned or who are not privy to the momentous sea change indicating that science will encompass “life’s deepest questions.” Of course, for audiences that are already convinced that science (and, in particular, neuroscience and psychology, the two sciences upon which TML leans most heavily) is the proper arbiter, these claims merely reaffirm previously held beliefs. If science is already presumed to be the only means of a reliable objective epistemology, then it would have to be the methodology by which to resolve epistemological conflict, in the domain of ethics or any other domain. The text sports a claim to explain “how science can determine human values,” and for these already-converted audiences, the interest in the text may be just this – how does science do that?

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29 See below regarding TML’s odd attempt to construe science as equivalent to all reliable and objective inquiry, encompassing not only typical notions of science (physics, biology, psychology, etc.) but methods by which we would determine that Kennedy was assassinated. The criteria by which history counts as “science” whereas, e.g., moral philosophy explicitly does not, are mysterious at best; the argument reads something like, “We should only use objective techniques of inquiry to study morality; therefore we should use science, by which I mean these techniques of inquiry which I declare to be objective.”
While it is not obvious that the text really addresses that – the bulk of it is spent in philosophical argument of “how science could determine human values,” and even contains the caveats:

I have said very little in this book about the current state of psychological science as it relates to human well-being. This research—which occasionally goes by the name of “positive psychology”—is in its infancy, especially when it comes to understanding the relevant details at the level of the brain. (181)

We can mean many things when using words like “happiness” and “well-being.” This makes it difficult to study the most positive aspects of human experience scientifically. In fact, it makes it difficult for many of us to even know what goals in life are worth seeking. (183)

such that one wonders whether the subtitle is an outright falsehood as opposed to overzealous marketing – it is quite obvious that for communication with a broader lay audience, part of the project need encompass why science should be this arbiter in the first place. Again, the actual explicit argument within TML is that science should replace the corrupt and corrupting institutions of religion (but also philosophy) as the mantles of moral authority. The text provides more than enough argumentation, compelling or not, that religion need be replaced. TML, however, seems to take science to be the default fallback to fill the void created by this alleged teardown of religion. This is puzzling in its own right. Especially coming from an advocate of secular values, why is there a need for science? Why not just have, e.g., secular humanism (which clearly has overlapping values with “science,” but is certainly not equivalent to it) substitute as a value system for the allegedly disproven religion? And beyond this initial step, there is no argument (beyond these declarations of the supremacy of neuroscience and psychology for
explaining human experience) as to why even if you were to accept science as the fallback to fill the vacuum, why these sorts of science in particular are the most promising and best arbiters as opposed to other scientific options like sociology, anthropology, etc. (especially given the aforementioned admissions within the text that neuroscience and psychology in particular are in their infancies with regard to understandings of well-being, the central factor in morality per TML’s consequentialist model!).

In sum, the value of broad science literacy (see Chapter 1) is enmeshed in an accompanying broad acceptance of science as a means to objective knowledge. Developing this broad respect is an additional challenge for science communicators, one that TML fails to address, let alone answer. It seems that rather than (at least purporting to) illustrate how science can determine human values, a real effort at making this particular argument to a broad lay audience would deliver some argument as to why science is the domain in which to do this and, beyond that, why neuroscience and psychology ought to be the specific domains for best accomplishing this effort (instead of the declaration that they are by fiat featured in TML). The absence of these kinds of arguments, in the introductory pages of TML or otherwise, is a first indication that the implicit mindset backing TML is that these arguments need not be made either because 1, the arguments are self-evident, or 2, the audience intended for this text does not require convincing of the authority of science or these variants of science. The broad science communication project and general efforts at compelling the public to be more interested, educated and invested in science seem inimical to the idea that these arguments are self-
evident, leaving the conclusion that at least to a large degree, *TML* contains embedded assumptions of audience that render it unconcerned with the need to vouch for science as an appropriate methodology in the ethical / moral domain. I.e., it is not truly even attempting to reach a broad American lay audience, the majority of whom would not find it so obvious that “science can [and should] determine human values.”

**Explicit Features of Harris’s Project and Science in The Moral Landscape**

Science communication critics are not limited to inferring the project or the science of *TML*. It is important to first set this broader framework for understanding the shortcomings of *TML* as an act of science communication by reading between the lines and spelling out the implications of the particular approaches that the text takes and content that it emphasizes. But *TML* also contains explicit statements of intended project and explicit statements of the characteristics and kinds of science communicated. These explicit definitions help to clarify Harris’s intended effects (even if it always worth remembering that intended effects and achieved effects may not match). They also help flesh out the context for *TML*’s rhetoric and provide further “flags” / indications of the conceptual distance between *TML*’s aims and those of a project genuinely intended for mass consumption by science-naïve audiences. Below, I will first detail *TML*’s explicit statements of purpose before moving to a description of the kinds of science with which it purports to be concerned.
Explicit Descriptions 1 – TML’s Statement of Project

The explicit statements of project in TML are few relative to the number of explicit characterizations of the science therein. Still, these few examples will suffice to illustrate some interesting aspects of the text’s purpose and the role of science imagined for morality (before the kinds and nature of that science are explicitly laid out below). First, there are several claims in the introductory chapter regarding the arguments that the text will contain, including an argument about the equation of value with the well-being of conscious creatures, that this well-being is the only thing that can be reasonably valued, the universality of that value, and that study of said value should be limited to the purview of science:

I will argue, however, that questions about values—about meaning, morality, and life’s larger purpose—are really questions about the well-being of conscious creatures (1)

Cancer in the highlands of New Guinea is still cancer; cholera is still cholera; schizophrenia is still schizophrenia; and so, too, I will argue, compassion is still compassion, and well-being is still well-being (2)

… the well-being of conscious creatures—which is, I will argue, the only thing we can reasonably value (11)

If we define “good” as that which supports well-being, as I will argue we must … (12)

… we will see that there is no such thing as Christian or Muslim morality. Indeed, I will argue that morality should be considered an undeveloped branch of science. (4)

TML indeed contains these promised arguments, most in repeated fashion. The organizational purpose of these arguments, though, is further clarified in two places (once
in the main text and once in the endnotes). The project of the text is described as a “conversation starter” with some qualifications. In the instance in the endnotes, it is to clarify (and excuse) *TML*’s lack of engagement with academic philosophy, summarily dismissing the projects therein as “inaccessible” to popular audiences and claiming the okay of unnamed professional philosophers:

My goal, both in speaking at conferences like TED and in writing this book, is to start a conversation that a wider audience can engage with and find helpful. Few things would make this goal harder to achieve than for me to speak and write like an academic philosopher. Of course, some discussion of philosophy will be unavoidable, but my approach is to generally make an end run around many of the views and conceptual distinctions that make academic discussions of human values so inaccessible. While this is guaranteed to annoy a few people, the professional philosophers I’ve consulted seem to understand and support what I am doing. (197)

There are two interesting indications of audience here: one, that Harris is overtly at peace with “annoying a few people” in a manner that seems intentionally antagonistic of specialists in philosophy who would not necessarily be specialists in science; two, that the goal is to engage a “wider” audience and not a generally “wide” one. The latter charge may be a case of splitting hairs in that surely all forms of popular science communication could be described as trying to reach a wider audience, but the context here is important: wider than the audience discussing academically philosophical accounts of human values is not, with apologies to academic philosophers, a wide audience at all. The orientation here seems to start zoomed in on the experts and zooms out beyond the scope of those interested in their fine distinctions, which at least on face does not seem to match a description of a “broad lay audience.” A further problematic
indication of audience assumption embedded within the text is the admission that reaching a wider audience necessitates an “end run around,” which it is worth noting is a metaphor for an American football play, the success of which depends largely on well-executed deception. Regardless of whether this subtext was intended, the equation with engaging wider audiences and reducing the level of discourse and/or excluding overly complex philosophy does not bode well for the integrity of the communication, science or otherwise, being truly representative of the discourse in the expert domain. This is to say that Harris appears to be classically equating reaching wider audiences with dumbed down content, a classic complaint of the failures of popular science communication (Treise & Weigold, 2002).

The other invocation of conversation-starting appears in the main text and establishes the extant scope of major sources of popular moral accounts. TML aims to disabuse readers of these popular sources and begin conversations in the correct domain:

Of course, we will have to confront some ancient disagreements about the status of moral truth: people who draw their worldview from religion generally believe that moral truth exists, but only because God has woven it into the very fabric of reality; while those who lack such faith tend to think that notions of “good” and “evil” must be the products of evolutionary pressure and cultural invention. On the first account, to speak of “moral truth” is, of necessity, to invoke God; on the second, it is merely to give voice to one’s apish urges, cultural biases, and philosophical confusion. My purpose is to persuade you that both sides in this debate are wrong. The goal of this book is to begin a conversation about how moral truth can be understood in the context of science. (1-2)

This is one of several divisions of complex domains into neat dichotomies; while this serves to clarify matters dramatically, it patently does so at the risk of oversimplification
(discussed in detail in Chapter 3). For now, it suffices to note that in this quotation lay the claims that 1, the entirety of potential reader audiences is subdivided into those who draw a worldview from religion / faith and those who do not; 2, both of these sides are profoundly misguided in their worldviews; and 3, (implicitly) once this misguided-ness is noted, science is by default the proper context in which to understand science. Note again that the broad division made in point 1 – that we live in a world comprised of “religious people” and “non-religious people” – frames the entire argument of the book around religion, not even in opposition to science, just as a dichotomy of religion’s presence and absence. This is not surprising – as noted repeatedly, Harris is well know for his polemical stance toward religion – but it does severely color a later claim about the project of the text:

> While religion is not the primary focus of this book, any discussion about the relationship between facts and values, the nature of belief, and the role of science in public discourse must continually labor under the burden of religious opinion. I will, therefore, examine the conflict between religion and science in greater depth in chapter 4. (24)

This appears to be a classic instance of the lady doth-protesting; naturally the anti-religious polemicist is incentivized to frame his book as a scientific account of morality and not yet another anti-religious diatribe. Science and anti-religion are so thoroughly intertwined within *TML* that even in the simple framing of the project, Harris cannot help but implicate this religious obsession by categorically defining all moral worldviews on the basis of religion’s presence or absence. If it weren’t already obviously the case – religious practices, groups, anecdotes, ideologies, etc., are repeatedly propped up for derision throughout every chapter of the text, only more so in chapter 4 – it is indicated
here that TML’s sense of science is necessarily attached to an anti-religious stance (and also to an anti-non-religious stance, if we accept the claim that non-religious accounts of morality tend to occupy the limited range of claims about “apish urges” and such as indicated). If TML’s primary focus is supposedly a scientific account of morality (the actual primary focus is left unstated in this particular section of the text), then “religion is not the primary focus of this book” amounts to an empty claim. Since science only acts within the text as a rebuttal to religious claims, religion lurks throughout the text; if it is not the primary focus, then it is its shadow.

_TML_ does manage to escape its religious moorings in making two final explicit descriptions of project that I take to be, intentionally or not, interrelated:

Clearly, one of the great tasks of civilization is to create cultural mechanisms that protect us from the moment-to-moment failures of our ethical intuitions. We must build our better selves into our laws, tax codes, and institutions. … This is where a science of morality could be indispensable to us: the more we understand the causes and constituents of human fulfillment, and the more we know about the experiences of our fellow human beings, the more we will be able to make intelligent decisions about which social policies to adopt. (70)

The goal is not to get more Americans to merely accept the truth of evolution (or any other scientific theory); the goal is to get them to value the principles of reasoning and educated discourse that now make a belief in evolution obligatory. (175)

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30 Per TML’s repeated insistence on the neurological equivalence of facts and values – see below – it is quite tempting indeed to question why the goal is not to “get people to fact the principles of reasoning.” I jest, but it is worth a side note that for all the alleged equivalence of facts and values as objects of belief (based on neurological correlates of assessment of their truth), there is no discussion whatsoever regarding the neurological correlates of the act of valuing. At the risk of semantic nitpicking, it seems like this is precisely the kind of literary trip-up that undermines the claims of the book; how can facts and values be equivalent in the world if the primary proponent of that view can’t help but write in terms that distinguish them?
In addition to the Hobbesian state-of-nature overtones apparent in the former quote, it indicates that the power of a scientific account of morality would be in its ability to allow “us” to make better policy decisions. It is unclear to which “us” it is referring – citizens, voters, expert consultants, policymakers themselves, etc. – and as indicated above in Chapter 1, this question of for whom science is to serve as a beneficial tool is a key concept of popular science communication. If the answer to this question is policymakers, scientific experts, or any other parties relatively high up in the power structure, then the promises of science communication in TML are distanced from the “from the ground up / betterment of the individual” aims of the broader science communication project. TML itself is that much further distanced from popular science communication proper in that it would be advocating a sort of trickle-down science communication in that it is only, e.g., the policy maker who would need to grasp the science and the general lay public would benefit downstream (so long as the policy-makers had the political cachet to convince the general lay public to go along).

The latter statement, though, indicates TML is intended to be part of a project of improving the scientific literacy – specifically the scientific, not science literacy – of Americans generally. This is made explicit in the emphasis on principles of scientific reasoning and not the facts of any particular theory. This is promising for TML’s stance as popular science communication in that it is not emphasizing policy-makers but simply “Americans.” This might indicate that the “us” mentioned above is more on the level of citizenry / voters, and the structure imagined is that an informed populace would be more likely to support scientific initiatives in the social policy domain. This would fall in with
several of the stated aims of the broader scientific communication project noted in
Chapter 1.

However, the factor that complicates this promise is that *TML* on the whole does not
emphasize an increase in understanding of scientific process. It is limited to using science
as evidence for the anti-religious argument and as such focuses on science facts, content
more in line with “science literacy” aims. The further absence of epistemological
frameworks for grasping these science facts (discussed in Chapter 3), let alone a thorough
explanation of the scientific processes by which these facts were gathered or the rationale
for putting trust in these facts – i.e., the “principles of reasoning” referenced in the quote
– also belies the notion that *TML* is really engaged in laying the foundations for the
widespread grasp of science as a process. This leaves the intended mode of science
communication in *TML* at best muddied and at worst makes it seem as though the text
fails to meet its own explicitly stated aims.

**Explicit Descriptions 2 – TML’s Science**

In the spirit of one of the dominant features of *TML* – its use of dichotomous language to
parse complex, tangled issues, discussed below – I assert that the explicit statements
regarding the nature of science that *TML* makes serve to both clarify the scientific scope
of the book and utterly muddle the rationale for this scope. A zoomed out summary can
be made in a few sentences of dichotomous terms as well:
1. In attempting to collapse the “values” of morality into the “facts” of science, TML tries to encompass effectively the whole of rational inquiry as “science” but then offers qualifiers as to which domains of rational inquiry are significant and which interpretations count such that rational inquiry is tightly restricted.

2. It argues that a scientific account of morality is fundamentally an account of the interactions between the well-being-correlated brain-states of sentient creatures and states of the world, but it also claims that the evolution of the species that include these sentient creatures no longer bears on their well-being, radically de-emphasizing the fact the very existence of these species and their experiences were crafted by evolutionary interactions of brain-states and world states in the first place.

3. It purports to explain how science can determine values [for future application] as a prescriptive enterprise but reports only descriptive accounts of the intersection of science and morality, giving no indication as to what kind of science could escape the fact/value divide that TML alleges science to obliterate.

Science = Rationality: A Too Broad Brush

These elements are confusing if not self-contradictory and perhaps reflect the conceptual difficulty of talking about capital S Science as a collective enterprise. Further placing restrictions on what divisions of capital S Science count serves as yet another step away
from popular science communication for *TML* since the project seems disinterested in spreading broad literacy and understanding and more interested in advocating for a particular, if confused, interpretation. Despite the inconsistencies in the explicit descriptions of science, there is a bit more helpful contextualization to be gleaned from parsing these descriptions in detail.

One of the driving efforts behind all of these rather philosophical accounts of what *TML* takes properly construed science to be (and be capable of) is the effort to obliterate the long-standing division between facts and values. In brief, the claim is that the difficulty in accepting the notion that morality falls under the purview of science stems from a widespread belief that science is in the business of facts, whereas morality is in the business of values. And because of the folk-belief in the staunch separation between facts and values (as well as the influence in academic circles of the is-ought distinction first stated by Hume (1740) and the account of the naturalistic fallacy discussed by Moore (Moore & Baldwin, 1993)), people are unduly (according to *TML*) predisposed to believe that science is fundamentally incapable of addressing morality due to its through-going values-based nature. *TML* repeatedly argues that the division is illusory, drawing at times on a few different arguments that question these philosophical underpinnings and note that scientific inquiry is necessarily infused with values through and through, e.g.:

*Science has long been in the values business. Despite a widespread belief to the contrary, scientific validity is not the result of scientists abstaining from making value judgments; rather, scientific validity is the result of scientists making their best effort to value principles of reasoning that link their beliefs to reality, through reliable chains of evidence and argument. This is how norms of rational thought are made effective.* (144)
The centerpiece of this argument, though, relies on neurological evidence (from Harris’s own work as a neuroscience graduate student) that the brain allegedly treats beliefs the same independent of whether their propositional content consists of facts or values. *TML* repeatedly emphasizes this similarity in the brain’s treatment of concepts as evidence for the equivalence of those concepts in the world, and this assessment is one that has drawn considerable criticism (Nagel, 2010; Blackburn, 2010; Ohr, 2010). Nevertheless, the outcome in *TML* is a claim that facts and values are equivalent, and that any hesitation to apply science to morality is therefore ill founded. The point is hammered throughout the text, but is nicely summarized late in the course of the main text:

> Throughout this book, I have argued that the split between facts and values—and, therefore, between science and morality—is an illusion. (179)

This brief summary is quite telling of the enormous scope of science claimed by *TML*. Independent of whether the argument for the illusory nature of the fact / value divide in the text is successful, implicit in this statement is a claim not just that science is in the business of facts, but that all facts are necessarily under the purview of science. While the quote is fairly representative of the imprecise and broad collapsing of concepts that occurs within the pages of *TML* - it seems obvious that whatever interrelation of facts and values the text has demonstrated, it would at most represent evidence of an overlap between science and morality, not an utter obliteration of the capacity to distinguish

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31 Not to mention the gross equivocation of values and morality; this is likely the product of overselling / oversimplification on Harris’ part, but surely there are e.g. aesthetic values that cannot be collapsed to their moral content.
between discussing morality and discussing science – it actually follows from the root claims regarding science that *TML* introduces rather early on. In the course of a rebuttal of widespread secular views regarding moral relativism, there is a first indication that the “science” referenced on *TML*’s cover will not be limited to the sorts of “hard science” readers may have imagined:

> It seems to me, however, that most educated, secular people (and this includes most scientists, academics, and journalists) believe that there is no such thing as moral truth—only moral preference, moral opinion, and emotional reactions that we mistake for genuine knowledge of right and wrong. While we can understand how human beings think and behave in the name of “morality,” it is widely imagined that there are no right answers to moral questions for science to discover.

Some people maintain this view by defining “science” in exceedingly narrow terms, as though it were synonymous with mathematical modeling or immediate access to experimental data. However, this is to mistake science for a few of its tools. Science **simply represents our best effort to understand what is going on in this universe, and the boundary between it and the rest of rational thought cannot always be drawn.** There are many tools one must get in hand to think scientifically—ideas about cause and effect, respect for evidence and logical coherence, a dash of curiosity and intellectual honesty, the inclination to make falsifiable predictions, etc.—and these must be put to use long before one starts worrying about mathematical models or specific data. (29, emphasis mine)

It seems that the “real” claim of *TML*, then is that “rational thought can determine human values” or even more vaguely, that “our best effort to understand what is going on in this universe” is what will be able to determine human values. This, of course, strips the claim of much of its punch; at the risk of adopting Harris’s ironic tone in discussing his work, it is hard to imagine that something less than our best effort would win out in this domain. Patently, this caveat / attempt to preempt counterarguments does so at the expense of
obscuring what specific kinds of rational thought or domains of science TML is invoking.

There is, in short, no indication of how to identify best efforts outside of an attenuated list of prerequisites for “thinking scientifically.” An attempt to articulate the relatively wide-circle interpretation of science that TML intends to communicate appears in the endnotes:

For the purposes of this discussion, I do not intend to make a hard distinction between “science” and other intellectual contexts in which we discuss “facts”—e.g., history. For instance, it is a fact that John F. Kennedy was assassinated. Facts of this kind fall within the context of “science,” broadly construed as our best effort to form a rational account of empirical reality. Granted, one doesn’t generally think of events like assassinations as “scientific” facts, but the murder of President Kennedy is as fully corroborated a fact as can be found anywhere, and it would betray a profoundly unscientific frame of mind to deny that it occurred. I think “science,” therefore, should be considered a specialized branch of a larger effort to form true beliefs about events in our world. (195)

This is not merely an implication but a frank statement that the purview of science and the intellectual domain of all facts are actually equivalent. A description of the definition of science is well beyond the scope of this chapter, but suffice it to say that there is effectively no effort to outline a definition here whatsoever; in fact, TML emphasizes its absence of a strict definition, doing so in a manner that claims simultaneously that science is equivalent to ‘other intellectual contexts in which we discuss “facts”’ and a specialized branch that is nonetheless separable from these other branches. There are no means offered by which to make these separations. TML complicates matters further later in the text by again expanding the scope of what science can accomplish:

The answer to the question “What should I believe, and why should I believe it?” is generally a scientific one. Believe a proposition because it is well supported by theory and evidence; believe it because it has been experimentally verified; believe it because a generation of smart people
have tried their best to falsify it and failed; believe it because it is true (or seems so). This is a norm of cognition as well as the core of any scientific mission statement. As far as our understanding of the world is concerned—there are no facts without values. (144)

The conclusion of this quote spells out that the comment is intended to support another assertion that the fact/value distinction is not as stark as widely believed; this is a primary argument of *TML*. But in the course of making that argument, the text provides 1, a blunt statement that (“generally” speaking) science can/should serve as the basis for all belief (a dramatic and hyperbolic claim indeed); and 2, that theory and evidence, experimentation, and attempts at falsification are all features of rationales for “generally” “scientific” answers. These are wholly inadequate criteria for limning science by any definition. There are plenty of endeavors involving these aspects – e.g., feminist ethics, an enterprise specifically derided within *TML*, utilizes “theory and evidence” – that do not typically get counted as science, broadly speaking or in the pages of *TML*. Again, unless the goal is to have science constitute the entirety of empirical endeavor (and there are plenty of reasons in the text, cited below, to believe that such a tremendous scope is not really intended), this description of science is unfocused/incomplete. As referenced above and in Chapter 1, there is ample insistence in *TML* that science is the only legitimate means for investigating morality, but why this is the case or what the criteria for distinguishing when one is actually dealing with science and when one is not are conspicuously absent from the text. The meta-communicative aspect is absent, and the

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32 And the cringe-worthy advice that one ought to believe things because they are / seem to be true. To be fair, this quote occurs in the course of a larger argument that one ought not be permitted to believe things solely because of how they make you feel, so the distinction there is a little more obvious with that context. Still, the context also represents an opportunity for an author intending to imbue readers with scientific values to convey some sense of how these values might be applied to belief formulation. And to believe something because it “seems true” is still arguably a belief based on feeling, though that is perhaps neither here nor there.
text appears to be relying upon a tacitly agreed upon notion of science that the audience can be assumed to share. These are either accidental omissions or (I would claim) more likely features of the text that reveal a restricted intended audience. There is no reason to believe that a broad popular lay audience would engage the text with notions of the appropriate and relevant features of science “preloaded” in this way.

The Other End of a Broad Brush: An Overly Narrow Nib

Accompanying this overly broad definition of science and its capacities throughout the text of *TML* are restrictions on the kinds and interpretations of science that count. The text is, then, paradoxically overly broad and arbitrarily restricted. Much of this restriction stems from *TML*’s construal of morality strictly in terms of the experience of sentient/conscious creatures\(^{33}\) and its collapse of morality as exclusively defined / determined by consequences regarding their wellbeing. This places the locus or moral consideration squarely on individuals’ experiences, which drives *TML* to constrain its evidence to sciences that describe these particular phenomena, namely psychology and neuroscience. It grounds the emphasis on these narrowly defined domains of science on the basis of assertions that start with the following:

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\(^{33}\) This, really, means the conscious experience of human beings. The argument throughout *TML* is painstakingly framed in terms of the experience of (alternatingly) “conscious beings” and “conscious creatures,” but there are slips throughout the text like “morality for us means” and such that indicate conscious humans are the conscious creatures of import. Harris even frames part of the argument against free will as stemming from the fact that chickens resemble us neurologically but so obviously lack a rich inner life. The overwhelming majority of examples in *TML* involve conscious humans, and the conscious experience of animals with regard to such obviously ethical topics of eating them, their suffering, etc., fail to warrant even a full page of discussion. I mention it here because this particular criticism has not featured prominently in the general criticism of Harris, and it constitutes yet another one of the Us v. Them dichotomies referenced below (not that chickens are likely to read *TML*).
Given that change in the well-being of conscious creatures is bound to be a product of natural laws … (13)

This first assertion is not surprising and appears throughout the introduction of the text (though it was most succinctly stated on page 13). *TML* (and Harris generally) is entirely and unabashedly committed to an atheistic, materialist worldview that necessarily holds that everything is the product of natural laws. Presumably conscious experience, being a subset of everything, would fall in line. The comment, though, in combination with the sentiment that morality just is well-being (or is at least assessed by virtue of it) does establish the point that a science of morality would have to describe the natural laws that describe and/or predict changes in well-being. The natural follow up question is what sciences could best model, account for, explain, predict, etc., these changes of well-being.

This question is nominally answered by an already cited quotation:

> Movement across the moral landscape can be analyzed on many levels—ranging from biochemistry to economics—but where human beings are concerned, change will necessarily depend upon states and capacities of the human brain. While I fully support the notion of “consilience” in science—and, therefore, view the boundaries between scientific specialties as primarily a function of university architecture and limitations on how much any one person can learn in a lifetime—the primacy of neuroscience and the other sciences of mind on questions of human experience cannot be denied. Human experience shows every sign of being determined by, and realized in, states of the human brain. (7, emphasis mine)

34 Again, it seems obvious that “where human beings are concerned” would necessarily overlap with “where animals are concerned” at least to a degree such that states and capacities of other animals would be relevant as well. It’s a separate argument, but suffice it here to note that it does seem that Harris is trying to have his consequentialist conscious experience and eat it, too.
This second passage represents a declaration by fiat that the natural laws describing these changes in well-being are undoubtedly to be discovered and developed best within the practices of “neuroscience and other sciences of mind” since their “primacy cannot be denied.” There is not a hint of an argument to be found in the text to back this assertion of neuroscience’s supremacy relative to other sciences; this is the sole sentence that supposedly addresses and establishes the rationale for defaulting to neuroscience as the proper scientific approach to morality. This is another textualization of a tacitly assumed-to-be-shared assumption within the readership about the nature of science and its relationship to morality / human experience. Importantly for the interrogation of the text as an article of science communication, no explanation of the particular mechanics of neuroscience – what particular characteristics or findings make it so obviously supreme, or even what methodologies or brand of “neuroscience” the text is referring to – makes any appearance in the text, either\textsuperscript{35}. Without a justification, the defaulting to neuroscience as the scientific authority on moral matters is both strikingly arbitrary and not in line with the spirit of a popular science communication act that would be compelled to not just clarify what neuroscience has to offer but deliver a meta-communicative argument regarding why one should place importance on neuroscience in particular among the range of sciences that have engaged morality.

This is precisely the sort of textual element (or lack thereof) I refer to above when I claim that meta-communicative justification for the application of science to matters of

\textsuperscript{35} Much later in the course of the text, it becomes apparent (though is never explicitly stated) that the kind of neuroscience that reigns supreme is psychological experimentation using functional magnetic resonance imaging (fMRI) to establish neural correlates with various subjective psychological states as reported by individuals. The strengths and weaknesses of fMRI technology are discussed in the endnotes, and again, no argument appears in either the main text or the endnotes with regards to the rationale for fMRI’s technology to other modes of scientific inquiry.
morality is thoroughly lacking in *TML*. I again emphasize that I do not mean to argue that *TML* contains factually incorrect information by virtue of this statement; it may very well prove to be true that neuroscience offers the best avenues into understanding morality when measured against traditional disciplines concerned with morality or other scientific disciplines. The problem lies in the fact that there is no indication in the text as to by what metric this measurement would take place, or why that unnamed metric would be appropriate besides. The argument that neuroscience is appropriate because “change will necessarily depend on states and capacities of the human brain” is risible as an argument for designating neuroscience supreme on the continuum of sciences “from biochemistry to economics;” by the argument of consilience alluded to in the same quote, change in well-being can be modeled as necessarily depending upon everything from enzyme dynamics to international economic policies, too. At the risk of redundancy, this explicit statement of science establishes the text as an account of some neuroscientific applications to ethics, but fails to meet requirements to establish the text or the specific applications as particularly worthwhile / important. There is plainly no attempt to get beyond “what science says about morality” here. This is fine for the pre-established audience already inclined to see the importance in such information, but in leaving those arguments out of the text, *TML* seems to ignore even basic attempts to communicate with broader lay audiences.

However, it is not as though rationales for advocating the supremacy of neuroscience do not exist. For one chicken-or-egg explanation, Harris holds a PhD in neuroscience that he earned in part by investigating neural correlates of moral belief. So possible explanations
for his advocating for the supremacy of neuroscience in matters moral are either that this belief is what drove him to pursue neuroscience in the first place or, more cynically, that he now has incentives to argue for the supremacy of his own specialty. I prefer to take the argument at face value, though, and assume the stance portrayed in *TML* would be the same regardless of his degree. Perhaps more charitably, *TML* gives other indications that the framework of science being communicated is by nature hierarchically organized such that upper levels of organization are necessarily best explained by alluding to findings at the lowest available level. The tip of a ubiquitous reductive iceberg is revealed in a third passage:

The relevant neuroscience is in its infancy, but we know that our emotions, social interactions, and moral intuitions mutually influence one another. We grow attuned to our fellow human beings through these systems, creating culture in the process. (8)

This is, of course, a highly contestable claim, since it appears to imply that individuals ontologically if not temporally precede culture. That on its face seems inaccurate since all of these factors (emotions, social interactions, moral intuitions, humans growing attuned to one another) always occur within the context of extant cultures that have undoubtedly modified those factors, so it seems doubtful that this literal interpretation is actually what is intended. Again, I am not particularly concerned with how accurate the statement but rather aim to distill what appears to be the organizational structure of science Harris is attempting to communicate here. The most coherent reading would take this as a claim that moral aspects of cultures are best modeled and explained by science when they are treated *as though they were* built “from the ground up” by the interactions of individuals
within those cultures. I.e., a reductive model that centers on individuals is most efficient even if other models (and other branches of science entirely) may explain the same phenomena at other levels. This reading may strike some as overly charitable, but it does cohere with repeated examples of hierarchical structure and reduction within the text that time and again explain higher level phenomena in terms of their lower level components (see below).

If we allow TML that charitable reading of communicating a science that would default to hierarchical explanations for explanatory efficiency, interpret it through the lens of one of the explicitly stated projects in which TML is engaged (that of crafting better social policy for the whole of societies), and combine these factors with a material worldview that would equate the experience of individuals as being “caused by” or “realized in” their brains, the rationale for focusing to such a degree on neuroscience becomes clearer (even if it is not explicitly justified). This assessment helps to better get at exactly the form of science that “counts” within the scope of TML and thus helps clarify why this science is being, however incidentally, communicated. That these qualifiers and justifications are not laid out within the course of the text itself is problematic for TML’s role as an act of popular science communication, and the resultant limited scope of science that counts is additionally problematic for use of TML as a model for the broader science communication project.

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36 Or “equivalent to” or “best explained as,” etc. – the specifics of the relationship don’t matter as much as the claim that a quantifiable measurement of a brain correlated to a particular subjective experience in an individual is superior to / more explanatory that the account of the subjective experience by itself.
Evolution, or “Darwinian Should (This Bird Has Flown)”\textsuperscript{37}

One division of science that definitively does not count within the confines of TML as an appropriate science for determining human values is biological accounts of evolution. Despite the fact that evolution has been a go-to topic for several authors who would incorporate science into philosophical interpretations of ethics (see, e.g., Flanagan, 1996; Glannon, 2007; Prinz, 2007; Ruse, 2006; McShea & McShea, 1999; Dennett, 1996; Joyce, 2001 and 2006; Churchland, 2011), TML explicitly denies the relevance of contemporary accounts of evolutionary morality to the particular kinds of scientific accounts of morality that the text argues should provide guidance for proper notions of human value. At best, evolution requires consideration solely as lamentable historical baggage impeding ethical behavior for modern humans. For example, in a typical (though somewhat ironic\textsuperscript{38}) section entertaining the possible necessity of now harmful in-group / out-group divisions as a precursor for the development of now-beneficial altruism and compassion in humans, Harris notes that, “If true, this is one of the many places where we must transcend evolutionary pressures through reason” (101).

This, combined with myriad other claims in the course of the text that the shackles of evolution no longer apply (e.g., in the ensuing discussion of synthetic biology, the statement that “evolutionary constraints no longer hold” (102)), unmistakably pushes evolution to the margins. In short, despite repeated protestations of the claim that

\textsuperscript{37} With apologies to Lennon / McCartney.

\textsuperscript{38} One would think that TML’s rampant Us v. Them carving of the world for the purposes of argument might give Harris pause in denigrating in-group / out-group psychological dynamics.
morality is best described as the manifestation of “apish urges” (see above), \textit{TML} nonetheless treats evolution primarily as a process whose significance for morality ended some 12,000 years ago with the conclusion of the Pleistocene epoch. It does not bear on \textit{TML}'s moral science project, other than the fact that it has left humans with residual proclivities that must be overcome in order to reorient to the scientific project of maximizing well-being. That evolution obviously shaped human capacities for well-being (and must have played a formative role in the kind of world-state / brain-state interactions that Harris claims will form the basis for investigation of a science of morality) and is through-and-through enmeshed with our very definitions of all the considerations that \textit{TML} considers relevant to morality – happiness, health, pleasure, suffering, etc. – are fully acknowledged in the course of the text, but subsequently declared irrelevant for the forward-looking prescriptive project.

Juxtaposed against the arguments against the validity of the is/ought divide (and the naturalistic fallacy) found elsewhere in the text, these are confusing premises indeed. One would think that if how humans ought to be can really be derived from how they are scientifically determined to be, then the scientific theories of how they came to be that way would bear significantly. As Dobzhansky famously noted, “Nothing in biology makes sense except in the light of evolution” (1973); if neuroscience is engaged in biological understanding of humans (which I presume it to be), it seems a mistake to ignore the sense-imbuing contribution of evolutionary explanation (cf. Robert, 2008).
As I have noted throughout, I do not mean to contest TML’s argument here in terms of its plausibility or truth. I am merely highlighting that the simultaneous claims that 1, the physical realities that undergird contemporary human experience are primary to a morality of science and 2, the processes that developed them have no bearing on our understanding of them, appear to be in conflict and are at the very least surprising. While many critics have found this apparent conflict confusing if not untenable, a closer (and more charitable) reading of the text does shed some light. TML helpfully (for my purposes) takes pains to distinguish its notion of science from that of the widespread evolutionary takes on morality. The following quote is extensive but warrants interpretation to help clarify that text’s rationale here; I will highlight and delve into a few concepts to provide a possible explanation for this apparent dissonance in the text:

It is important to emphasize that a **scientific account of human values**—i.e., one that places them squarely within the web of influences that link states of the world and states of the human brain—is not the same as an **evolutionary account**. Most of what constitutes human well-being at this moment escapes any narrow Darwinian calculus. While the possibilities of human experience must be realized in the brains that evolution has built for us, our brains were not designed with a view to our ultimate fulfillment. Evolution could never have foreseen the wisdom or necessity of creating stable democracies, mitigating climate change, saving other species from extinction, containing the spread of nuclear weapons, or of doing much else that is now crucial to our happiness in this century.

As the psychologist Steven Pinker has observed, if conforming to the dictates of evolution were the foundation of subjective well-being, most men would discover no higher calling in life than to make daily contributions to their local sperm bank. After all, from the perspective of a man’s genes, there could be nothing more fulfilling than spawning thousands of children without incurring any associated costs or responsibilities. But our minds do not merely conform to the logic of natural selection. In fact, anyone who wears eyeglasses or uses sunscreen has confessed his disinclination to live the life that his genes have made for him. While we have inherited a multitude of yearnings that probably
helped our ancestors survive and reproduce in small bands of hunter-gatherers, much of our inner life is frankly incompatible with our finding happiness in today’s world. The temptation to start each day with several glazed donuts and to end it with an extramarital affair might be difficult for some people to resist, for reasons that are easily understood in evolutionary terms, but there are surely better ways to maximize one’s long-term well-being. I hope it is clear that the view of “good” and “bad” I am advocating, while fully constrained by our current biology (as well as by its future possibilities), cannot be directly reduced to instinctual drives and evolutionary imperatives. As with mathematics, science, art, and almost everything else that interests us, our modern concerns about meaning and morality have flown the perch built by evolution. (13-14, emphasis mine)

The first point to note is the ill-formed construction of the explicit statement that “a scientific account … is not the same as an evolutionary account.” I doubt that this is intended to imply that an evolutionary account would be an unscientific one, so I submit that a better formulation would have been that “this scientific account … is not the same,” etc. This would not necessarily countenance well with the sweeping narrative style of TML, but it would provide added clarity as to what is being communicated (even if it would involve an admission that this is “a science” and not capital S Science about which TML is concerned).

The second telling point is the unfailingly correct claim that “our brains were not designed with a view to our ultimate fulfillment.” Evolutionary accounts of ethics do not claim that our brains have been designed this way, so how this point functions to exclude evolutionary accounts from consideration is not clear. However, the type of meta-ethical types of claims that evolutionary accounts do make – e.g., that our concept and the circumstances of “ultimate fulfillment” are determined by, loosely, the structure of our
brains, and the structure of our brains is shaped by evolutionary pressures (as well as other factors) – is the more germane point as to the relevance of evolution to our sense of ultimate fulfillment. Notably, it prompts one to be skeptical of the veracity of our sense of ultimate fulfillment and whether it tracks to the “truly ethical.” The concern (if not the outright claim) is that these notions – human flourishing, ultimate fulfillment and the like – are contingent features of our evolved psyches, not independent facts of existence, and their “truth” lies in the evolutionary processes that “really” explain why we tend to have them. Evolutionary investigations of ethics are largely meta-ethical in this way; they purport to investigate the basis of our sense of what is ethical and where it comes from, not necessarily what our sense of what is ethical is (or what it ought to be) (Wilson, 1975 and 1978; Ruse, 1991 and 2006b). Were a science of morality concerned with the source of our moral intuitions and willing to challenge the link between our sense of fulfillment and moral realism (both of which strike me as reasonable domains), evolution would seem to be an obligatory framework to use.

Of course, TML infamously contains a footnote decrying Harris’s sense of the increase in boredom in the world at mere mentions of meta-ethics (discussed in more detail in Chapter 3), so his refusal to engage the meta-ethical ramifications of evolution is unsurprising (even if not justified). The above point about meta-ethics actually goes a long way in framing the kind of science that TML claims to be relevant. The text treats well-being, fulfillment, happiness, suffering, etc., as premises, physical givens and realities of the world; to question these notions appears to Harris to be fruitless (or, I suppose, boring). Granted these assumptions, much of the controversy surrounding this
component of *TML* melts away. Given a tractable set of factors that one identifies as morally salient, one can ask all kinds of scientific questions about morality (and science does, as evidenced by the litany of psychological studies *TML* cites). But as mentioned, whether these factors make sense – what they are actually grounded in – is the exact question evolutionary ethics tends to ask (and actually underlies much of the general reluctance to invoke science in moral matters; the controversy in not over whether science can measure happiness, but whether happiness ought to be the thing measured).

When combined, these facets point to a notion that it is not that evolution *should* be excluded from moral science, it *must* be if one is to get the sort of tractable inquiry Harris advocates off the ground. So *TML* engages in a sort of commonsense meta-ethics, a “Come on, what else could we possibly be concerned about other than well-being?”, and proceeds to apply neuroscience to the consequent efforts to explain, pin down and prescribe factors that promote well-being. *TML* contains a few admissions (already noted) that science is embedded with values and therefore cannot prove its own worth; one cannot use science to demonstrate that science is correct (at least without a lot of question-begging). The corresponding claim about meta-ethics might be that we likewise should not expect science to be able to demonstrate that its metrics of morality are correct, but once it has those metrics, it can usefully assist in prescriptions to improve those metrics.

The alleged inability of evolutionary ethics to bear on forward-looking improvement of these well-being metrics provides further justification for leaving evolution off the table.
Even if this rationale is arguably premised on a misunderstanding of evolutionary ethics’ largely meta-ethical components, other highlighted sections in the above quote emphasize this as the rationale for the exclusion of evolution science. The text assumes that “conforming to the dictates of evolution would be the foundation of subjective well-being” and “the mind merely conforms to the logic of natural selection” would be the type of claims that an evolutionary science of morality would make. I happen to think these assumptions are bizarre and reflective of a superficial grasp of how evolution relates to ethics (what evolutionary account of the moral sense equates higher calling with conscious pursuit of maximal reproductive fitness? And why would conforming to the logic of natural selection involve resigning to the “the life his genes had made for him?”\textsuperscript{39} Surely the technological creativity involved in inventing eyeglasses had some relationship to evolution, no?), but taking them at face value, I agree that they do not well match the sorts of commonsensical notions of well-being that \textit{TML} advocates. If the science of \textit{TML} is uninterested in understanding meta-ethical foundations (i.e., the reasons for why we perceive well-being the way we do, the reasons why our sense of well is what it is) and it further claims that evolutionary science covers only residual yearnings that are not only tangential to but “incompatible with happiness in today’s world,” then again, exclusion of this branch of science is expected.

The idea that well-being is “fully constrained by our biology (and its future possibilities)” yet “cannot be reduced to instinctual drives or evolutionary imperatives” summarizes this stance within \textit{TML}, and it is again worth noting that sophisticated accounts of

\textsuperscript{39} It is also somewhat flippant for a scientist to simplistically characterize bad eyesight as necessarily due to genetic factors.
evolutionary ethics (e.g., Ruse 2006b) would not make this claim about reduction besides. Still, there seems to be some distance between the notion of “cannot be reduced to” and “have nothing to do with” (or, more specifically, that one need not think about evolution at all when considering morality). I ascribe this to the fact that TML is a text baldly unconcerned with meta-ethics; where the factors and constrictions of biology related to well-being just do not matter.

In predictable course, TML does not contain explicit arguments for why this exclusion is warranted. This is another instance in which broader concerns about communicating the import of science to potential lay audiences go entirely unaddressed. But at least one begins to understand why the science conveyed is being restricted this way. The science of TML is a science of the here and now applied to tomorrow. The yesterday of evolution, however much “light” it sheds on biology, is irrelevant.

This is obviously not the consensus view of biologists and neuroscientists, and TML’s own allusions to moral characteristics of non-human primates (for instance, in the course of its attack on Francis Collins in Chapter 4) give lie to the notion that evolution is truly absolutely irrelevant to the purposes of its project. But the overt claims about its inappropriateness as a contributor to a science of morality are maintained through the course of text. While TML does not pretend that evolution never had anything to do with human morality, its relative uselessness in the present project is adamantly argued in moments and could not be stated any more plainly:
We have good reason to believe that much of what we do in the name of “morality”—decrying sexual infidelity, punishing cheaters, valuing cooperation, etc.—is borne of unconscious processes that were shaped by natural selection. But this does not mean that evolution designed us to lead deeply fulfilling lives. Again, in talking about a science of morality, I am not referring to an evolutionary account of all the cognitive and emotional processes that govern what people do when they say they are being “moral”; I am referring to the totality of scientific facts that govern the range of conscious experiences that are possible for us. To say that there are truths about morality and human values is simply to say that there are facts about well-being that await our discovery—regardless of our evolutionary history. (49, emphasis mine)

And again, an even starker separation of contemporary human life from its evolutionary history appears as a conclusion to the long-form passage above:

As with mathematics, science, art, and almost everything else that interests us, our modern concerns about meaning and morality have flown the perch built by evolution. (14)

The line that “almost everything else that interests us” has “flown the perch built by evolution” should count among TML’s most audacious claims. Its conceptual problems aside, within the context of science communication efforts, it seems to burn the forest for the trees. In an effort to exclude evolutionary accounts of the moral sense from its moral science, TML takes evolutionary accounts in all domains of interest to have been transcended / irrelevant. In the context of American science communication, where evolution has been such a long-standing hot-button issue, belittling its importance is a magnificently counterproductive move. It is also one in an expanding list of instances in which TML conveys no concern for an impact on popular science literacy (and

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40 Which are really too numerous to get into here, but we could start with the fact that by all accounts human evolution is still occurring (e.g., Ehrlich, 2000), so it seems that perch would be moving beneath our feet
furthermore, Harris hypocritically seems to be abandoning efforts of science promotion in
a known area of conflict between science and religion). Discounting meta-ethics and
thereby discounting the relevance of evolution to a science of morality are understandable
if controversial moves. But it seems that Harris could have argued that the particular bird
of moral concern had flown without having torched\textsuperscript{41} the significance of evolution for all
domains in the process.

\textbf{Sciences of Morality}

The final kind of clarification that \textit{TML} makes with regard to the science it communicates
further puts the exclusion of evolutionary accounts into perspective. \textit{TML} reiterates what
is intended by “science” in “how science can determine human values:”

First, I want to be very clear about my general thesis: I am not suggesting
that science can give us an evolutionary or neurobiological account of
what people do in the name of “morality.” Nor am I merely saying that
science can help us get what we want out of life. Rather I am arguing that
science can, in principle, help us understand what we should do and should
want—and, therefore, what other people should do and should want in
order to live the best lives possible. My claim is that there are right and
wrong answers to moral questions, just as there are right and wrong
answers to questions of physics, and such answers may one day fall within
reach of the maturing sciences of mind. (28)

This sentiment re-emphasizes the exclusion of evolutionary science but also definitively
distances \textit{TML}’s science from a descriptive account. This punctuates the notion that
“determine” means to “determine for the future” and “determine what values ought to

\textsuperscript{41} Or, say, lit a fire.
be,” not “determine what they are / people claim them to be” (though the “science can help us understand” is a somewhat softer claim than the “determine” on the book jacket).

More importantly, this emphasis allows for the possibility that intuitions about proper values can be wrong. Science, after all, would not need to determine values if we already really knew what they ought to be. And this is in line with the exclusion of evolutionary accounts. So goes the argument: if intuitions can be wrong about morality, and evolution accounts for those intuitions, then evolution (and evolutionary accounts) can be wrong, too (remember that evolved tendencies are often portrayed as shortcomings to be overcome). An evolutionary explanation would be an explanation of how we came to be wrong-headed, not one of how we might strive to be right-headed.

It remains unclear how we can be so sure that the allegedly rationally derived emphasis on the well-being of conscious creatures isn’t also an intuition. The rightness of well-being still relies on a declaration by fiat (which really amounts to a repeated insistence in the text that Harris just can’t imagine there being anything else worth worrying about). Nevertheless, this emphasis against descriptive accounts of what has been considered moral in the past gives a slightly less opaque view on TML’s anti-evolutionary biases. The division between these different approaches to moral science is laid out in specific detail later in the text:

It seems to me, therefore, that there are at least three projects that we should not confuse:
1. We can explain why people tend to follow certain patterns of thought and behavior (many of them demonstrably silly and harmful) in the name of “morality.”

2. We can think more clearly about the nature of moral truth and determine which patterns of thought and behavior we should follow in the name of “morality.”

3. We can convince people who are committed to silly and harmful patterns of thought and behavior in the name of “morality” to break these commitments and to live better lives. (49)

The text follows this division by identifying project 3 as the “most important task facing humanity in the twenty-first century,” although it goes on to identify project 2 as the major focus of TML. Project 3, it turns out, is impossible without first determining “what moral truths exist.” Project 1 is also identified as “all but irrelevant” to projects 2 and 3. This further details why Harris holds descriptive and or meta-ethical accounts (both of which Harris would likely describe as under the project 1 heading) from evolutionary ethics as being irrelevant to TML’s project. The assumed incompatibility between these projects is articulated a page later:

But notice that the first two projects give quite different accounts of how “morality” fits into the natural world. In 1, “morality” is the collection of impulses and behaviors (along with their cultural expressions and neurobiological underpinnings) that have been hammered into us by evolution. In 2, “morality” refers to the impulses and behaviors we can follow so as to maximize our well-being in the future. (50)

It is clear that Harris takes 2 to be the obvious proper role of “morality” in the world, and the science that studies that variant of morality to be the proper science. The range of science TML aims to communicate, then, is crystallized. TML focuses on science

[42] It definitely fails to explain why Harris draws so heavily on type 1 projects as evidence for his argument throughout the remainder of the text, though.
regarding formulations of well-being that can aid in prescriptive efforts to maximize this well-being in the future. And given that the definitions of well-being are alleged to depend on facets of human existence that have flown evolution’s perch, the exclusion of evolution in light of this and the several factors referenced above at least makes sense, even if it is still contestable and/or plain ill-advised.

This is as plainly laid out as the intellectual borders of “science” in TML gets. Even after this straightforward statement, however, the actual references to science addressing well-being are few and far between. The text itself features this already cited incriminating late admission:

I have said very little in this book about the current state of psychological science as it relates to human well-being. (181)

This is quite a caveat to offer so late in the course of the book. Harris attempts to explain it away by offering that such a science is in its infancy. The problem does not lie in the absence of evidence from the second project, though. It lies in the excess of scientific evidence from the first project, and that so much of the text is burdened by synthesizing the contemporary “first project” variant of scientific approaches to morality (that the text specifically claims are all but irrelevant to the purported primary focus of the book!).

Many of the invocations of this descriptive, project 1-type scientific evidence are in the service of supporting TML’s commonsensical and/or intuition-based argument about the central, definitive role of well-being for morality. But by TML’s own stated logic, what

\[43\] Though as I have commented elsewhere, one might offer that the text stops short of actually detailing evidence from this second project. As H. Allen Ohr notes (2010), TML is part of a new trend of general audience science books that prospectively describe science to come instead of relating the cutting edge science of the present.
science says people do or have done in the name of morality is not relevant to those concepts of well-being. The thread of science that matters, and therefore the thread of science that needs communicating, gets entirely lost in this confusion.

In short, after an incredible amount of argumentation for and clarification of the science that counts, *TML* fails to deliver it. And attempts to wrangle first project science into service of the second project muddy the science that it does deliver. This wrangling requires Harris to spend much of the text reinterpreting prominent psychologists’ (E.g., Jonathan Haidt and Joshua Greene) work to fit this theory of morality’s equivalence with maximization of well-being. I will reserve specific examination of *TML*’s rebuttals for Chapter 3. As a final note, though, this serial rebuttal of fellow psychologists and neuroscientists – who adamantly disagree with Harris’s claims about the realistic possibility of prescriptive values science – raises serious questions about the locus of capital S Science in the moral domain, as well as how one would accurately communicate this science.

**Conclusion**

Whether “reading between the lines” or taking *TML*’s explicit statements of project and science at face value, the text appears problematic as an act of popular science communication with a broad lay audience. This is the case before the specific textual aspects of how science is communicated within are even addressed (as they are in Chapter 3 below). The analysis in this chapter gives several reasons to doubt that popular
science communication – at least with an audience close to that imagined by the broader science communication project – was really intended by Harris for *TML*. Even if this assessment is an overstatement, whether communication with that audience could be successful, particularly given the complex, convoluted account of what science *TML* is concerned with, is equally in doubt.

I have already noted that *TML* is not engaged in the broader science communication project, so its neglect of efforts to augment the science/-tific literacy of a broad audience is not particularly noteworthy. Still, the initial hypothesis (or really, hope) of this project was that the clarity attributed to *TML*'s science communication could be achieved by participants in the broader project via imitation. Thus far, the text gives every indication that its clarity is contingent on such vastly different audiences and purposes so as to make one suspect that the techniques and clarity may not transfer. In the upcoming chapter, I will lend more support to this disappointing conclusion by illustrating via textual evidence that the conceptual and literary techniques used in the course of conveying scientific evidence within *TML* continuously exclude lay audiences. *TML* is not engaged with the broad popular audiences that the literature on science communication imagines and thereby complicates current taxonomies of the kinds of and purposes behind popular science communication.
Chapter 3

TEXTUAL ANALYSIS – LITERARY, RHETORICAL AND CONCEPTUAL ASPECTS OF THE MORAL LANDSCAPE

Chapter Summary

This chapter continues the textual analysis begun in Chapter 2 with a closer look at the literary, rhetorical, and conceptual features that illustrate my characterization of *TML* as a non-general audience science book. An initial section identifies particular aspects of the text as contributing to the clarity of the science communication in *TML*; with caveats, I identify these textual features as imitation-worthy for participants in the broader science communication project. A second section identifies problematic aspects of the text that contribute to *TML*’s failure to adequately engage broad popular lay audiences. The bulk of the subsequent sections detailing these aspects in the text itself is spent cataloging the textual evidence for these claims.

The chapter concludes with an assessment of the normative lessons that can be gleaned from this analysis for participants in the broad science communication project. I additionally describe barriers to popular science communication that can be anticipated were the findings of this case study generalizable and if we took seriously the possibility that clear science communication necessitates a limited and already fairly knowledgeable audience.
Introduction

This chapter continues a close-reading based analysis of *The Moral Landscape*44. Against the contextual backdrop of statements of project and definitions of science explored in Chapter 2, it focuses on narrower textual features of the book, noting particular literary, rhetorical and conceptual aspects utilized within the text and their mitigation of its science-communicative efforts. I first briefly clarify the textual categorizations used to assess the text. These include a category of positive, imitable aspects to be co-opted (with qualifications) and a category of negative aspects to be differentiated from and taken under consideration (since broader project communicators are operating in the communicative space that features these aspects in “competing” works). I especially note that the term “imitable” does not indicate a recommendation to exactly copy, since some of the techniques utilized within *TML* appear to rely on the reductive nature of the science being communicated. I am expressly not recommending emphasizing reductive elements of science in order to facilitate its communication, and it is important to emphasize that imitating *TML*’s communicative style does not necessarily mean imitating the science that it puts forth as appropriate for the investigation and explanation of morality.

I then delimit seven aspects of the text (three in the positive, imitable category and four in the negative, to be taken under consideration and/or differentiated from category) prominently featured in *The Moral Landscape*. The positive aspects include:

44 The block-quoted selections in this chapter are all taken from (Harris, 2010) and the page numbers refer to the pages in the hardcover first edition.
1. Topical Dichotomization and Juxtaposition

2. Reliance on Analogy / Metaphor

3. Hierarchical and Reductionist Characterization

These aspects contribute to the clarity of TML’s science presentation in a manner that is compatible with the aims of the broader science communication project (though again with the caveat that authors should make sure that the techniques do not cast the science they are attempting to communicate in an overly reductive light). As such, they serve as imitable examples for science communicators and can facilitate clarity in individual efforts at increasing science-literate literacy, even though TML is not engaged in this project. I note that much of this chapter can serve as a cataloging of these examples, both to support the arguments of Chapter 1 and the overarching arguments of this dissertation as well as to serve as a practical reference.

Other aspects of TML may contribute to its own clarity but for myriad reasons conflict with the aims of the broader science communication project. They therefore need to be differentiated from by participants in the broader science communication project and furthermore taken under consideration when engaged in communication with lay publics. I.e., the fact that an author as popular as Sam Harris has engaged in these rhetorical techniques links science communication as a whole with these techniques, so science communicators engaged in the broader project are compelled to overcome if not actively counteract these associations. The negative aspects include:
1. Audience Dichotomization

2. Omission of Contextual / Epistemological Framework

3. Rhetorical Questions (and other references to assumed shared values/experience)

4. Overt Aggression / Irony

These negative aspects, in combination with the context of the statements of project and the limning of variants of science covered in Chapter 2, combine to contradict notions of *The Moral Landscape* as a proper act of science communication. For the multitude of reasons discussed, it does not read as engaging (or really, even seeking or welcoming) the kinds of broad lay audiences emphasized by the broader project, let alone being concerned about public science/-tific literacy. As in the section on positive aspects, I note that this section serves as a catalog of examples, again in support of the primary arguments from Chapter 1 and as a veritable reference of techniques to avoid and address in popular science communication for the broader project.

I then briefly summarize the normative lessons that can be taken from the characterization of *TML*’s positive and negative rhetorical aspects. I conclude this chapter by delving into the point raised in Chapters 1 and 2, that the disheartening potential implication of this finding is that it may be the case that clear communication in the popular science domain relies on the sort of “choir-preaching” that *The Moral Landscape* appears to be engaged in. This has important implications for the broader science communication project participants beyond lessons for their communication *per se.*
Categories of Textual Analysis

Chapter 2 outlined reasons contained within TML’s stated project and variant of a science of morality to doubt that the work truly falls in line with Harris’s professed aim to spread scientific knowledge to a broader general audience. Against this suspicious backdrop, one may be tempted to dismiss the text out of hand. I instead put some degree of faith in critical assessments of TML’s clarity and attempted to discern what prominent features of the text contributed to this clarity (as well as which features amplified the anti-broad-audience text and subtext of TML described in Chapter 2).

I identified seven repeated features of the text (see Table 1 below) and organized them into textual aspects primarily concerned with topical content and aspects making reference (however oblique) to characteristics of audience. In the light of the reputation of clarity of the presentation of scientific content, I operated under the hypothesis that the content-focused category of aspects would tend to aid clarity. I likewise hypothesized (in the light of the discussion in Chapter 2) that audience-oriented aspects would tend to further highlight TML’s oppositional relationship to popular lay audiences. These hypotheses were for the most part confirmed with some important qualifiers that will be described in course below (see, e.g., the caveats given for the concept of “imitable”).

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45 Anecdotally, friends and colleagues familiar with Harris’s work have informally confirmed my list of aspects and agreed that they capture Harris’s literary style. To add a degree of respectable rigor to this invariably subjective exercise, though, I used a modified version of the Grounded Theory approach of qualitative analysis first noted to my knowledge in (Glaser & Strauss, 1967). I call it a variant because I was drawing heavily on the description of Grounded Theory in LeGreco, M. & Tracy, S. J. (2009), itself a modification of Glaser, and that work emphasized methods for interviews across time, not texts. Suffice it to say that I adhered to a process of coding instances of rhetorical technique, collecting them into the aspects listed and then categorizing them into positive and negative categories based on their over-arching relationship to content and audience mentioned in the main text above. There were more aspects than those listed (e.g., “The Edge-references” was a minor aspect), but these seven were the most frequent and the ones that bore most directly on the science communicative aspects of the text for the purposes of this project.
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In the category of aspects related to scientific content presentation (the “positive, imitable aspects”) are the following:

**Topical Dichotomization and Juxtaposition** – These are instances where topics, phenomena or concepts to be explained are introduced as mutually exclusive extremes of a continuum such that their characteristics are starkly differentiated. This also includes instances where a novel topic to be explained is introduced in opposition to (and contrasted with) a non-novel topic such that the novel topic is characterized primarily in terms of that which it is not (i.e., that it is to be entirely separated from the known entity). Both of these aspects clarify presentation by immediately contextualizing the thing to be explained, avoiding confusing examples of characteristic overlap and debatable relationship. In short, presentations emphasize “black and white” distinctions.

**Analogy / Metaphor** – Similar to the framing (though obviously not the meaning) of juxtaposition, these are instances where the novel or controversial thing to be explained is likened to a known or non-controversial parallel. The analogies appear primarily where part of *TML*’s science of morality is compared to another science that is either assumed to
be more easily understood or whose application is considered uncontroversial. The metaphors appear generally where science (or aspects of it) are related to non-scientific scenarios.

**Hierarchical and Reductionist Characterization** – These are instances where things to be explained are either placed in a hierarchy in which either levels up or down are assumed to be better understood and thus can provide a framework in which to define / explain the novel entity. These explanations are reductionist by nature (higher level entities / events are explained in terms of events at lower levels), but this aspect also includes instances where the hierarchy is applied not just in terms of explanation but in terms of ontology (a prominent example would be a move from “well-being is determined by conscious states which are determined by brain states” to “well-being is equivalent to those brain states”).

The descriptions of these aspects are clumsy in the abstract; the examples from the text will flesh these out considerably. For now, suffice it to say that all three of these aspects tend to draw distinct barriers around phenomena to be explained, relate novel phenomena to assumed-to-be-better-understood phenomena, or restrict the scope of phenomena to be explained. All of these approaches serve to decrease confusion by taking pains to circumscribe exactly what is to be explained in a manner that leaves no ambiguity for the reader. This is the commonality that I take to justify collecting these three aspects together under the “positive, imitable” category.

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46 This is accomplished either by collapsing multiple topics into a single hierarchical structure to be explained or by reducing multiple concepts to a single concept that was either already understood or could be explained directly.
Of course, the “imitable” descriptor warrants a qualification beyond the initial notion that since the aspects aid clarity, science communicators aiming for clarity should incorporate them into their work. While I argue that these positive aspects do facilitate clear communication of difficult topics, it seems transparent that they could do so at the expense of oversimplifying the explanations of the phenomena involved. In other words, the kinds of circumscription involved (the splitting, juxtaposing, analogizing, reducing, etc.) are all useful heuristics, both for science and explanation. But they tend to draw sharp distinctions, comparisons and equations where they may not truly exist. This may be a trivial observation, but black and white descriptions of the world, however clear they may be, do not necessarily make the world black and white. And an explanation of “X is like Y” may clarify the author’s understanding of X, but the comparison can still be overly vague or inexact relative to the actual facts of the matter, of whether X is really “like Y” in the relevant respect.

My concern is that as positive as these aspects are, Harris’s use of them could be overly dependent on his particularly stark and reductionist understanding of science and the world. The injudicious use of these aspects could result in descriptions that make the world seem to yield more readily to the precision of sharp divisions of scientific explanation than it actually does. Things are, in short, more complicated than that, and therefore typically more ambiguous than use of these aspects may make them seem.
One can, though, imitate a communicative technique separately from imitating the science that underlies it (though it may take more effort). So while I recommend the use of these aspects in service of clarity, I would not broadly advocate the oversimplified, overly reductionist variant of science that TML endorses. A circumspect application of these techniques with a mind to avoiding the sorts of overstatement of the extent to which, e.g., reductive heuristics of science are said to represent reductive realities, would serve to clarify communication of science even of a non-reductive nature. Therefore any recommendation for these aspects’ use is accompanied by a recommendation to emphasize the heuristic nature of these explanatory techniques. This would be, for example, a recommendation to spell out that while a black and white framing of the ends of a particular continuum may help relate the kinds of differences the continuum concept illustrates (and therefore serve nicely as an initial orientation to the concept), this does not mean that the distinctions implied by the black and white example are so readily apparent at every point up and down the continuum.

With this extensive caveat aside, I do believe these aspects could be useful to the broader project and therefore maintain the label of “positive” despite my admitted misgivings about their relationship to the brand of science in TML. Hopefully my point here is clear, so in the interest of avoiding confusion in the remainder of this chapter, I will refrain from continuously referencing these caveats (even though they certainly apply). These aspects do ultimately facilitate communication, which is the motivating aim here, so I will take them for their beneficial application and trust communicators to avoid over-extending them.
By contrast, the category of negative aspects to be taken under consideration and differentiated from does not need caveats; these aspects really have no place in the broader science communication project. These aspects directly or indirectly make reference to characteristics of potential audiences for the text, with the exception of the last aspect, which involves direct rhetorical antagonism of potential audiences. These aspects include:

**Audience Dichotomization** – These are instances of division of audience that categorize potential audiences along an axis of “us” and “them.” They also engage in broad stereotypical description of audience and tend to denigrate the ideas or opinions of members of the categories described.

**Omission of Contextual / Epistemological Frameworks** – These are instances of explanation that blatantly omit background, contextualizing information necessary to facilitate a detailed understanding of the topic or phenomena being presented. They represent either neglect of this background information’s import or reflect an assumed understanding of this background knowledge on the part of the audience. This latter factor means the omissions serve not just as barriers to understanding but (intentional?) acts of exclusion of lay audiences that would be reasonably expected to lack this higher level background knowledge.  

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47 It is worth noting that some of the omitted background knowledge/concepts – e.g., what it really means for a particular brain region to “govern emotions” – is admittedly bafflingly complex, and it is doubtful that Harris or other neuroscientists have a particularly straightforward explanation for this. Nevertheless, TML routinely contains no effort
**Rhetorical Questions (and Assumed Values)** – These are instances of non-literal questions in that their answers are assumed to be immediately obvious and agreed upon by the audience. The issue here is not the kinds of assumptions that accompany the use of rhetorical questions generally but that what might be immediately obvious to an expert audience would not necessarily be obvious to a lay audience. This aspect is expanded to include instances of assertion where a fact or value at issue is presented without rationale / argument and ignores the controversy or the ambiguity widely held to be associated with the fact / value. This, too, indicates restricted senses of audience that already agree with the author and therefore lends to the sense of the text as “preaching to the choir.”

**Overt Aggression / Irony** – These are instances of verbal barbs aimed at audiences or adversaries that veer from efforts at explanation and amount to attacks on persons that invoke questions of communicative decorum. They are predominantly insincere / ironic / sarcastic and carry tones of hostility that would alienate if not antagonize potential audiences. This aspect reinforces the feel of “choir-preaching” alluded to above and arguably reflects an attitude of in-group / out-group bullying in so far as the barbs seem to be efforts at humor, but they would only seem to be humorous to those who are not members of the group being attacked.

As mentioned, these negative aspects dominate the text of *TML*. In light of the complications stemming from the project in which *TML* is engaged (both implicitly and explicitly) and the paradoxically overly broad and arbitrarily restricted variant science it
presents, these aspects effectively bar *TML* from functioning as a proper act of popular science communication. This casts a particularly dark pall over the initial hope that it would serve as a model for texts engaged in the broader science communication project; however, there are still lessons to be gleaned from it, particularly with reference to these negative aspects. Most obviously, the aims of the broader project mean that these tendencies ought to be actively avoided, and any trend toward inadvertently resembling them – e.g., commentary on social divisions that could be taken for stereotypical categorizations of audience generally – ought to be explicitly qualified and tempered so as not to create these barriers to general audience receptivity. More nuanced is that the aspects must be taken into consideration / accounted for. It is not enough to avoid them, because given that they are prevalent features of at least this non-broader project effort, they may affect audiences independently of their presence or absence in one’s own communication. Therefore, broader project communicators ought to consider responding to these charges and make efforts to convey the message that while they may represent the views of a subset of scientists (Harris, for one), they do not represent assumptions made by the scientific community as a whole and particularly not those engaged in efforts at augmenting public science/-tific literacy.

The preceding account should effectively lay out the categories and aspects of *TML*’s science communication and their relevance to the broader project. The remainder of this chapter: 1, provides a detailed catalog of the instances of these aspects in the text (with brief accompanying commentary), and 2, concludes with a normative summary of
conclusions drawn from this investigation of TML not as a correct or incorrect account of a science of morality but as an act of science communication.

**Positive Aspects 1: Topical Dichotomization and Juxtaposition**

The first textual aspect, topical dichotomization and juxtaposition, is inherent in the framework of Harris’s titular metaphor for understanding an objective morality. *The Moral Landscape* is described early on:

Throughout this book I make reference to a hypothetical space that I call “the moral landscape”—a space of real and potential outcomes whose peaks correspond to the heights of potential well-being and whose valleys represent the deepest possible suffering. (7)

This hypothetical (really, metaphorical) space establishes a trend of dichotomous extremes in the book that provide for stark contrast to make differences between particular objects of explanation overt. The peaks of highest well-being and valleys of lowest well-being (here referenced as suffering) set up a continuum for the possible experiences to be scientifically investigated, but the particulars of the continuum are not discussed. Only its endpoints are mentioned and compared. In the course of an argument for the tractability of a scientific project to delineate these differences, *TML* uses these dichotomous endpoints to make obvious the kinds of distinction a science would make. Even in moments that acknowledge the existence of multiple possibly equivalent and difficult-to-differentiate points on the moral landscape, *TML* refers back to the dichotomy:
However, the existence of multiple peaks on the moral landscape does not make them any less real or worthy of discovery. Nor would it make the difference between being on a peak and being stuck deep in a valley any less clear or consequential. (7)

These dichotomizations are also reinforced with dichotomous metaphors (discussed in greater detail below):

To see that multiple answers to moral questions need not pose a problem for us, consider how we currently think about food: no one would argue that there must be one right food to eat. And yet there is still an objective difference between healthy food and poison. (7)

This dichotomization aspect is employed with other topics, notably in effort to cleanly distinguish scientific and religious approaches. As mentioned in Chapter 2, TML frames its project as intervening on a religious / non-religious dichotomy of morality with an allegedly more appropriate variant of a science of morality (one that focuses on prescription and excludes evolutionary science among other things). This actually manages to simultaneously set up two new dichotomies to drive many of the arguments in the book: one along a [religion / (appropriate-)science] axis and one along an [inappropriate-science⁴⁸ / appropriate-science] axis.

… people who draw their worldview from religion generally believe that moral truth exists, but only because God has woven it into the very fabric of reality; while those who lack such faith tend to think that notions of “good” and “evil” must be the products of evolutionary pressure and cultural invention. On the first account, to speak of “moral truth” is, of necessity, to invoke God; on the second, it is merely to give voice to one’s apish urges, cultural biases, and philosophical confusion. My purpose is to persuade you that both sides in this debate are wrong. (2)

⁴⁸ Any science – but especially evolutionary and anthropological sciences – that would offer evidence in favor of an illusory or relativistic morality are particularly incorrect according to TML.
A prime utilization of the dichotomy is evident in the text when a better understanding of neuroscience is alleged to not only align with a better morality (by inspiring more compassion toward fellow humans), but inherently represents a move away from religion:

… most us know that disorders of the brain can trump the best intentions of the mind. This shift in understanding represents progress toward a deeper, more consistent, and more compassionate view of our common humanity—and we should note that this is progress away from religious metaphysics. (110)

This framing again acknowledges the continuum via the notion of progress toward and progress away from but articulates the possibilities only in terms of mutually exclusive ends: scientific understanding OR religious metaphysics. This stems, of course, from Harris’s repeated arguments regarding the incompatibility of religion and science (and presumably religious metaphysics and scientific metaphysics?), but this does not change that what science is is rendered clear by constant reference to its opposite. TML hammers this divide, alluding to it even in the course of discussing presidential appointment politics:

While Collins’s stewardship of the NIH seems unlikely to impede our mincing progress on embryonic stem-cell research, his appointment is one of President Obama’s efforts to split the difference between real science and real ethics on the one hand and religious superstition and taboo on the other. (173)

Getting back to the titular metaphor, the vast majority of dichotomous orientation is in service of one of the foremost claims of TML, that the truth of morality lies in its description along a dichotomous axis of well-being / suffering. The text describes these
extremes purportedly to limn a continuum, but focuses on clear descriptions of the ends to convince readers of the capacity of science to differentiate moral states. This is true in the introductory narratives describing The Bad Life and The Good Life:

**The Bad Life**

You are a young widow who has lived her entire life in the midst of civil war. Today, your seven-year-old daughter was raped and dismembered before your eyes. Worse still, the perpetrator was your fourteen-year-old son, who was goaded to this evil at the point of a machete by a press gang of drug-addled soldiers. You are now running barefoot through the jungle with killers in pursuit. While this is the worst day of your life, it is not entirely out of character with the other days of your life: since the moment you were born, your world has been a theater of cruelty and violence. You have never learned to read, taken a hot shower, or traveled beyond the green hell of the jungle. Even the luckiest people you have known have experienced little more than an occasional respite from chronic hunger, fear, apathy, and confusion. Unfortunately, you’ve been very unlucky, even by these bleak standards. Your life has been one long emergency, and now it is nearly over.

**The Good Life**

You are married to the most loving, intelligent, and charismatic person you have ever met. Both of you have careers that are intellectually stimulating and financially rewarding. For decades, your wealth and social connections have allowed you to devote yourself to activities that bring you immense personal satisfaction. One of your greatest sources of happiness has been to find creative ways to help people who have not had your good fortune in life. In fact, you have just won a billion-dollar grant to benefit children in the developing world. If asked, you would say that you could not imagine how your time on earth could be better spent. Due to a combination of good genes and optimal circumstances, you and your closest friends and family will live very long, healthy lives, untouched by crime, sudden bereavements, and other misfortunes. (15)

I quote these at length to denote just how extreme the technique is; the portrayals of both ends of the spectrum are cartoonish and laughably fictional. But this is entirely the point. No one could mistake what kinds of outcomes and metrics will count in a science of
morality with these examples as the foundational possibilities; even if one disagrees with the variant of good and bad TML puts forth, there’s little doubt what it is.

TML is consistent and repetitive with the dichotomy. While establishing the concept of the moral landscape within the introduction and first chapter of the book, this set of extremes is recalled repeatedly. Here are a few of those dichotomous descriptions:

Happiness and suffering (22)

science can help us find a path leading away from the lowest depths of misery and toward the heights of happiness for the greatest number of people (28)

worst possible misery and greatest possible well-being (30)

absolute misery / absolute flourishing (39)

worst possible misery for everyone (39)\(^\text{49}\)

Even though the terminology is not consistent – one can only write “well-being” and “suffering” so many times before reaching for a thesaurus, it seems – the text bludgeons the reader with this stark contrast. This clearly establishes the metric a prescriptive psychology of morality would employ.

The text also uses extreme examples to establish foils against which to juxtapose alternatives. This is broadly true of the text’s treatment of religion; as mentioned, religion

\(^{49}\) This particular instance features only one part of the dichotomy, but it’s mentioned here primarily to offer space in which to address the text’s reliance on reader intuition of that which is bad. This reliance on intuition is largely successful – the extended quote above on the Bad and Good Life leaves one hard-pressed to argue that the labels are backwards – but the efforts to rigorously define “bad” in the text are quite clumsy. Here, Harris notes that a “change that leaves everyone worse off … can be reasonably called bad.” (39). This is question-begging worthy of a textbook entry, as one would need to know what badness consists in in the first place before assessing whether everyone were worse off.
is included in a dichotomous relationship with science, but it is also held up alone to be
denigrated as an inept moral system to which any real moral consideration would stand in
opposition.

This is specifically true in the use of a laundry list of extreme behaviors *TML* uses to
ridicule notions of cultural relativism and the anthropologists / ethnographers who hold
them:

Thus, even the most bizarre and unproductive behaviors—female genital
excision, blood feuds, infanticide, the torture of animals, scarification, foot
binding, cannibalism, ceremonial rape, human sacrifice, dangerous male
initiations, restricting the diet of pregnant and lactating mothers, slavery,
potlatch, the killing of the elderly, sati, irrational dietary and agricultural
taboo attended by chronic hunger and malnourishment, the use of heavy
metals to treat illness, etc.—have been rationalized, or even idealized, in
the fire-lit scribbings of one or another dazzled ethnographer. (20)

*TML* argues that science can distinguish the moral from the immoral. This argument is
facilitated by selecting extremes to identify as overtly immoral (as the likely-to-be-
controversial gray areas may be less submissive to scientific interrogation as described in
*TML*). It also helps that ethnography as a practice is established as an extreme here – one
so allegedly ludicrous as to endorse these obviously immoral behaviors – such that this
anthropological methodology is set up as a foil for the more reasonable science of
morality that Harris imagines.

This association of extreme examples with moral theories or variants of science that
would oppose the vision for a science of morality from *TML* happens repeatedly. In a
But there are many different ways for an ape to respond to the fact that other apes find his wife desirable. Had this happened in a traditional honor culture, the jealous husband might beat his wife, drag her to the gym, and force her to identify her suitor so that he could put a bullet in his brain. In fact, in an honor society, the employees of the gym might sympathize with this project and help to organize a proper duel. Or perhaps the husband would be satisfied to act more obliquely, killing one of his rival’s relatives and initiating a classic blood feud. In either case, assuming he didn’t get himself killed in the process, he might then murder his wife for emphasis, leaving his children motherless. There are many communities on earth where men commonly behave this way, and hundreds of millions of boys are beginning to run this ancient software on their brains even now. (51)

The opposition of evolutionary accounts of morality to true accounts continues in an alignment of our natural behavior with “patently unethical behaviors.” The text additionally invokes the extreme natural phenomenon of cancer as representative of negative potential of nature (and motivational for the need to differentiate “good” from “natural”):

We must continually remind ourselves that there is a difference between what is natural and what is actually good for us. Cancer is perfectly natural, and yet its eradication is a primary goal of modern medicine. Evolution may have selected for territorial violence, rape, and other patently unethical behaviors as strategies to propagate one’s genes—but our collective well-being clearly depends on our opposing such natural tendencies. (101)

In sum, the alignment of alternative moral systems with extreme (im)moral behaviors is a recurrent theme of the text. The motivation here is the establishment of clear foils against which the now standout science of morality advocated by TML will stand. One more
example occurs within narratives comparing the morality of “our” culture to that of foreign cultures. In instructing readers to imagine an alternative mindset, the text points at the following example:

Consider the thinking of a Muslim suicide bomber who decides to obliterate himself along with a crowd of infidels (63)

Clearly suicide bombers do not represent just any alternative to “our” mindset. They do juxtapose quite easily, though, and draw on moral intuitions that the text assumes will easily differentiate these mindsets from “our” own.

Finally, (and as a segue to the next section), note that the text entangles its analogies with these extremes, too. While comparing a science of well-being to a science of health, TML invokes the following extremes:

There may come a time when not being able to run a marathon at age five hundred will be considered a profound disability. (12)

Indeed, the difference between a healthy person and a dead one is about as clear and consequential a distinction as we ever make in science. (12)

The former passage is part of an argument that the dynamic definition of morality should not bother us any more than the dynamic definition of health, as both may change in the future. The selected change in health, of course, forces us to imagine a shift so large so as to radically alter our concepts; presumably our shifts in moral thinking would be miniscule by comparison and should bother us even less. The latter passage engages the

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50 The us / them distinction is problematic in its own right; I mention this in Chapter 2 and discuss it under negative aspects below.
murkiness of health but uses an extreme to conquer this murkiness. However fine the continuum may be, health is still a useful construct in its capacity to differentiate not just from non-health but from death. In both passages, the pattern of frank juxtaposition is exemplified. There is little subtlety in *TML*, but this serves to make arguments and explanations clear (and, unfortunately at times, loud).

**Positive Aspects 2: Analogy and Metaphor**

As noted, the entire framework of *TML* rests on its titular metaphor. The umbrella-concept of the moral metric of well-being measured in peaks and valleys as people, cultures and systems of government traverse a landscape is a striking image. The metaphor does a good job of illustrating the concept of moral equivalencies (peaks or valleys of equal heights). It also cleanly spells out constrained paths, the notion that a move from one local peak\(^{51}\) of well-being to a neighboring higher peak may require a move through a valley. This idea is reminiscent of other well-known scientific concepts like reaction activation energy\(^ {52}\) and is used to explain controversial concepts like the

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51 The idea of local peaks/valleys borrows not just from the obvious domain of geography and topography, but is also reminiscent of similar language regarding local maxima and minima commonly found in high school pre-calculus textbooks.

52 This is actually the inverse of the relationship *TML* discusses in that it involves moving from a local energy valley to a lower neighboring energy valley through a local energy peak. Briefly, the idea is that an exergonic chemical reaction should happen spontaneously since it represents a move to a lower energy state. But the energy required to “get the reaction going” means the system must initially get to a higher energy state (the activation energy) such that the move to a lower energy state does not happen automatically; the system must first traverse the higher energy state. In *TML*, the goals of a prescriptive science are to move higher on the moral landscape, but Harris acknowledges that there may be a sort of activation energy cost associated with such moves such that things must get worse before they get better.
need for the evolution of in-group / out-group concepts to facilitate altruism.\textsuperscript{53} The metaphor certainly has its detractors (Jollimore, 2010; Appiah, 2010; Robinson, 2010; Nagel, 2010; Blackburn, 2010; Ohr, 2010) in terms of its practical utility and reflection of the real world. Among other things, it designates the z-axis of well-being / suffering without describing the x- and y-axes, and one would think there would be more than two variables contributing to well-being.\textsuperscript{54} But its accuracy and utility aside, there is again no doubt what \textit{TML} describes. The relation of an abstract concept like the measurement of well-being to the physical space of the landscape establishes a pattern of metaphor and analogy in \textit{TML} that goes a long way toward explaining the book’s reputation for clarity.

\textit{TML} makes a habit of this relation of novel abstract concepts to concrete or otherwise assumed-to-be understood concepts. The flexibility of moral precepts – the idea that different situations call for different moral responses and that this should not cause us to doubt the reality of these moral precepts as natural laws – is related to heuristics of chess moves where it is noted that it is generally a bad idea to give up one’s queen, but this is not always the case. “Morality could be a lot like chess” (8).

In another instance, the possibility of moral character being a sexually selected trait is compared to the sexual selection example par excellence:

As first suggested by Darwin, and recently elaborated by the psychologist Geoffrey Miller, sexual selection may have further encouraged the

\textsuperscript{53} Effectively, empathy and compassion are tied to group identification, so one must have a capacity to identify “us and them” – and presumably treat “them” poorly – before the emotions required to facilitate treating “us” well could have evolved. Patricia Churchland in particular has commented on this possibility (2011).

\textsuperscript{54} Such that string theory’s fourteen dimensions may not be enough to model this moral landscape …
development of moral behavior. Because moral virtue is attractive to both sexes, it might function as a kind of peacock’s tail: costly to produce and maintain, but beneficial to one’s genes in the end. (56)

These sorts of individual examples are scattered throughout the text. The bulk of analogies and metaphors, though, like the moral landscape metaphor, are consistently applied to drive the text’s major argument. TML has two vital points (among others) to make in the course this major argument: 1, in spite of widespread hesitation to treat morality as an object of scientific inquiry, a science of morality would indeed be a legitimate science; and 2, that this science of morality can be rendered tractable by focusing on the somewhat ambiguous but still useful concept of “the well-being of conscious creatures.” To help make point 1, the text draws several analogies between a science of morality and more established sciences. These focus largely on characteristics of the object of the study; if objections to the morality as an object of study would apply equally to established objects of study in other disciplines, than these objections allegedly could not be legitimate complaints.

Some of these instances highlight the notion that the inability of people to come to a consensus on moral theory should not cause us to believe that this means morality defies scientific investigation:

Despite 150 years of working at it, we still can’t convince a majority of Americans that evolution is a fact. Does this mean biology isn’t a proper science? (36)

Everyone has an intuitive “physics,” but much of our intuitive physics is wrong (with respect to the goal of describing the behavior of matter). Only physicists have a deep understanding of the laws that govern the behavior of matter in our
universe. I am arguing that everyone also has an intuitive “morality,” but much of
our intuitive morality is clearly wrong (with respect to the goal of maximizing
personal and collective well-being). And only genuine moral experts would have
a deep understanding of the causes and conditions of human and animal well-
being. (36)

The framework of a moral landscape guarantees that many people will have
flawed conceptions of morality, just as many people have flawed conceptions of
physics. Some people think “physics” includes (or validates) practices like
astrology, voodoo, and homeopathy. These people are, by all appearances, simply
wrong about physics. In the United States, a majority of people (57 percent)
believe that preventing homosexuals from marrying is a “moral” imperative.
However, if this belief rests on a flawed sense of how we can maximize our well-
being, such people may simply be wrong about morality. (53)

The repeated claim here is that a failure of consensus or that people have individual (folk)
notions of science should indicate only that most people are likely to be mistaken, not
that the topic itself is impossible to study (or that scientific expertise cannot be developed
on the topic). TML further applies these analogies to resolve interpretations of the fact
that individuals consistently fail in explicit tasks of moral reasoning. After explaining
psychologist Jonathan Haidt’s interpretations of inconsistent moral performance in
psychological tasks, the text analogizes these failures to similar reliable failures in logic
and reason:

Haidt is pessimistic about our ever making realistic claims about right and
wrong, or good and evil, because he has observed that human beings tend
to make moral decisions on the basis of emotion, justify these decisions
with post hoc reasoning, and stick to their guns even when their reasoning
demonstrably fails. He notes that when asked to justify their responses to
specific moral (and pseudo-moral) dilemmas, people are often “morally
dumbfounded.” His experimental subjects would “stutter, laugh, and
express surprise at their inability to find supporting reasons, yet they
would not change their initial judgments ...”
The same can be said, however, about our failures to reason effectively. Consider the Monty Hall Problem (based on the television game show Let’s Make a Deal). (86)

The Monty Hall Problem is a classic demonstration that most people’s intuitions about probability are demonstrably incorrect\textsuperscript{55}. Therefore, this analogy serves to clarify the point that inconsistencies in moral reasoning do not really represent inconsistencies in morality itself. This may seem a trivial point to make, but this claim about moral disagreement relating to morality’s inherent ambiguity is widespread\textsuperscript{56}, so the effort to highlight the relationship between intuitions and facts about the world is warranted. From the argued perspective of \textit{TML}, morality is therefore like probability and should be treated as such – again, the argument is contestable, but the concept is quite clear.

As an aside, the text frequently puts a twist on these analogies in attempting to discredit religion as a moral authority. Here it is not that a moral science is as coherent as other

\textsuperscript{55} Briefly, the Monty Hall Problem offers a subject a choice of three closed doors, behind one of which is a prize. The subject picks a door, and the host opens a different door that does not have a prize. The subject is then offered the choice of staying with the door he/she originally chose or switching to the other still-closed door. Subjects reliably think this is a 50-50 proposition so their choice does not matter. But because the initial choice was out of three doors, there is only a 33\% chance that the original choice was correct, and there is actually a 67\% chance that switching the door will win the prize. Rationally, then, one should increase one's odds by changing doors. This is notoriously difficult for people to grasp, so the argument is that some widely shared intuitions about probability are wrong. As Harris notes, the problem becomes clearer if one imagines one prize behind one of 1 million initially closed doors, with the subject choosing one and the host subsequently opening 999,998 doors with no prize. The chance that the subject guessed correctly is one in a million, so it should be transparent that switching to the other door is the rational choice in that case.

\textsuperscript{56} Albeit for reasons other than those cited in \textit{TML}. This is likely neither here nor there, but it is strictly speaking not the disagreement that should cause skepticism over moral realism – Harris is correct on this point – but the roots of this disagreement. You can point out that people are wrong about the Monty Hall Problem by using an argument rooted in math and probability; the parallel with morality ends because in the case of moral disagreement, it is not clear what the resolution of the argument would be or ought to be grounded in. Again, my aim here is not to contest Harris’s claims, but per my point about caveats above, it is apparent that the clarity Harris gains by this particular analogy is rooted in the text’s willful refusal to engage meta-ethical concerns, which I would argue are the actual big-picture source of moral ambiguity.
sciences, but that a religious “science of morality” is as incoherent as other imagined religious sciences:

It seems clear that the Catholic Church is as misguided in speaking about the “moral” peril of contraception, for instance, as it would be in speaking about the “physics” of Transubstantiation. (35)

The second major point that *TML* makes via analogy and metaphor is a claim about the legitimacy of well-being as a scientific metric, despite the term’s overt ambiguity. In concert with Patricia Churchland57, *TML* relies heavily on an analogy between well-being and health. The analogy is helpfully straightforward and grounds the utility of well-being as a metric in the utility of health as a metric. It indicates that well-being itself may not yield to measurement (just as health does not) and thereby clarifies that well-being is a guiding concept to be measured in term of its components (happiness, flourishing, lack of suffering, etc.) just as health is measured in terms of longevity and freedom from illness58. It interestingly notes, too, that health is a component of well-being, so “we” broadly consider at least elements of well-being to be measurable already besides. The analogy is helpful if still controversial, and it saves a lot of explanatory effort by borrowing on health’s commonsensically accepted status. This is how the health analogy functions in the text; some examples follow:

To see that multiple answers to moral questions need not pose a problem for us, consider how we currently think about food: no one would argue that there must be one right food to eat. And yet there is still an objective difference between healthy food and poison. (7)

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57 Harris acknowledges Churchland having made the same comparison in an endnote, though he humorously “swears” that he conceived of the analogy independently.

58 Though these definitions of health are obviously controversial, too, a point that *TML* does not engage.
It seems to me, however, that the concept of well-being is like the concept of physical health: it resists precise definition, and yet it is indispensable. (11)

It seems clear that ascending the slopes of the moral landscape may sometimes require suffering. It may also require negative social emotions, like guilt and indignation. Again, the analogy with physical health seems useful: we must occasionally experience some unpleasantness—medication, surgery, etc.—in order to avoid greater suffering or death. (22)

Of course, goals and conceptual definitions matter. But this holds for all phenomena and for every method we might use to study them. My father, for instance, has been dead for twenty-five years. What do I mean by “dead”? Do I mean “dead” with reference to specific goals? Well, if you must, yes—goals like respiration, energy metabolism, responsiveness to stimuli, etc. The definition of “life” remains, to this day, difficult to pin down. Does this mean we can’t study life scientifically? No. The science of biology thrives despite such ambiguities. Again, the concept of “health” is looser still: it, too, must be defined with reference to specific goals—not suffering chronic pain, not always vomiting, etc.—and these goals are continually changing. Our notion of “health” may one day be defined by goals that we cannot currently entertain with a straight face (like the goal of spontaneously regenerating a lost limb). Does this mean we can’t study health scientifically? (35)

As a final aside, the text treats the concept of the brain via metaphor and analogy as well. I will cover the text’s hierarchical treatment of brain and human experience below, so I will reserve commentary for now, but here are a few examples of TML’s treatment of the brain in the course of scientific explanation via the analogy/metaphor aspect:

The human brain is an engine of belief. (14)

… the moral stigma that still surrounds disorders of mood and cognition seems largely the result of viewing the mind as distinct from the brain. When the pancreas fails to produce insulin, there is no shame in taking synthetic insulin to compensate for its lost function. Many people do not feel the same way about regulating mood with antidepressants (for reasons that appear quite distinct from any concern about potential side effects). If this bias has diminished in recent years, it has been because of an increased appreciation of the brain as a physical organ. (110)
No region of the brain evolved in a neural vacuum or in isolation from the other mutations simultaneously occurring within the genome. The human mind, therefore, is like a ship that has been built and rebuilt, plank by plank, on the open sea. Changes have been made to her sails, keel, and rudder even as the waves battered every inch of her hull. (119)

Positive Aspects 3: Hierarchical and Reductionist Characterization

The final positive, imitable aspect delineated here is the arrangement of concepts in explanatory hierarchies and subsequent explanation in reductive terms. As noted, these hierarchies and reductions run the risk of being imposed upon realities to be explained via science (rather than reflecting those realities). Nevertheless, provided sufficient qualification of the relationship between the explanation and the reality it describes, explicitly spelling out the hierarchical relationships assumed by the scientific theories and models being explained is helpful in establishing an organizational framework from within which science facts and process can be understood. To begin, I will give the flavor of the hierarchies TML employs by referring to some individual instances of hierarchical and / or reductive explanations. Two pervasive hierarchical structures – 1, the relationship of the brain to person and the world; and 2, the arrangement of well-being and its constituent components – will follow.

The individual instances of hierarchical arrangement and reduction in the text are telling of the general commitment to reductive logic and science made within TML. For example, to establish a tractable model for comparing the various ways we might measure the objective position of the entirety of humanity on the moral landscape, TML
invites readers to imagine a scenario where the world consists of just two people and the various ways they could organize their lives and pursue well-being. It surmises from this hypothetical scenario that:

Even if there are a thousand different ways for these two people to thrive, there will be many ways for them not to thrive—and the differences between luxuriating on a peak of well-being and languishing in a valley of internecine horror will translate into facts that can be scientifically understood. Why would the difference between right and wrong answers suddenly disappear once we add 6.7 billion more people to this experiment? (40-41)

The implication here is that if the moral landscape is tractable for a universe containing two people, it is tractable for universes containing four, eight, on up to 6.7 billion people as well. The science of the whole is just the cumulative science of its parts. Controversies over emergent properties would seem to complicate this simple up-scaling of two person moral dynamics, but putting that aside, the additive supposition plainly facilitates communication – the scenario of two people is vastly more constrained than the one where the entire population and the relative lack of parts renders the explanation less complex. That the text does not even engage the potential complexities and systems that arise from the inclusion of more and more people – not to mention the fact that it inaccurately describes the ontology of earth’s population as being a 6.7 billion person system “added to” a 2 person system – reveals just how thorough-going the assumption that reductive science is the operative model for a science of morality.

The text also engages the work of contemporary psychologists through this reductive lens. Jonathan Haidt’s Moral Foundations Theory famously identifies moral psychology
as being realized via varying investments in five different foundations of morality: Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity. The first two are identified as prioritized concerns for liberal ideologies, the latter three are treated as more important by conservative ideologies. TML asserts that these divisions are illusory and actually reduce to the first, Harm/Care:

In describing the different forms of morality available to us, Haidt offers a choice between “contractual” and “beehive” approaches: the first is said to be the province of liberals, who care mainly about harm and fairness; the second represents the conservative (generally religious) social order, which incorporates further concerns about group loyalty, respect for authority, and religious purity. The opposition between these two conceptions of the good life may be worth discussing, and Haidt’s data on the differences between liberals and conservatives is interesting, but is his interpretation correct? It seems possible, for instance, that his five foundations of morality are simply facets of a more general concern about harm. (89)

The text interprets the differences to be attributable to contrasting ideas about what constitutes harm. Whether this interpretation is “correct” is not important. This reduction (of a theory that has already reduced explanation of moral concerns down to five categories) acts in service of a simplicity that, intentionally or not, constrains the amount of science and conceptual territory to be explained. It is further a reduction in that it aligns Haidt’s theory with the operative theory of well-being / suffering underlying the moral landscape’s theoretical space. I.e., if freedom from harm is well-being, then Haidt’s moral psychology theory that “truly” identifies harm as the foundation of morality is subsumed by the theory of TML. Aside from the way that it functions to simplify the theories that need to be communicated, this is a striking argumentative

59 Since the publication of TML, Haidt has modified his list to include Liberty / Oppression as a sixth foundation that typically carries more weight in liberal ideologies / moral systems.
move. *TML* appears to claim that while Haidt’s theory appears to contradict the simplicity of a well-being based moral science, it actually grounds it!\(^{60}\)

Another repeated reduction in the text constitutes another controversial claim: that the traditional split between facts and values does not exist. This claim is stated throughout; a typical formulation is “There is no gulf between facts and values, because values reduce to a certain type of fact” (121). The description of this reduction establishes the hierarchical relationship between facts and values (in that values are not distinct entities but a subset of facts\(^{61}\)) along with the simplifying idea that there is nothing particularly special about scientifically describing values since one can describe them in terms of their “facthood.” This particular reduction is fairly vital to the central argument, since *TML* designates the fact-value divide as being the imagined barrier to scientifically investigating morality in the first place. Still, it is yet another act of simplification that tightens the scientific territory to be explained.

Two other topics central to *TML*’s argument, the relationship of the brain to persons / the world and the components that contribute to well-being, get an extensive hierarchical/reductive treatment. The first thing to note about the portrayal of the relationship to the brain and persons is that while at times human experience is described as being caused or determined by brain states, at other times the human is the brain:

\(^{60}\) Though this does, of course, contradict *TML*’s claims that science like Haidt’s from the first, descriptive project is irrelevant to Harris’s second, descriptive project, the one *TML* is allegedly engaged in.

\(^{61}\) I confess to finding this hierarchical relationship confusing because of the “certain kind of fact” qualifier. It seems this would still allow for a gulf between these “certain kinds of facts” and the rest of the facts. The reduction here, in other words, does not seem to reduce all of the way.
Our minds continually consume, produce, and attempt to integrate ideas about ourselves and the world that purport to be true: Iran is developing nuclear weapons; the seasonal flu can be spread through casual contact; I actually look better with gray hair. What must we do to believe such statements? What, in other words, must a brain do to accept such propositions as true? (14, emphasis mine)

Given the pains taken to argue that belief is equivalent to accepting propositions as true, it is difficult to take this something other than an equation of “we” and “brains.” This equivalence takes other forms later in the text. For instance, beliefs are described as being considered “from the point of view of the brain” (122). This borders on anthropomorphizing brains even more than the claim that brains are persons already does!

The identification of persons as their brains is strained when people’s concepts and their brains’ concepts appear to be in conflict. E.g., if I claim to believe one thing but neurophysiological evidence indicates my brain actually “believes” another, it might seem difficult to claim that we are one in the same entity. But it is not difficult according to TML. The equivalence allows for reducing persons to their brains such that the brain is ultimately given authority. To resolve the cognitive dissonance between a person holding one belief and his/her brain holding another, TML performs a reductive move to claim primacy for the brain. By this logic, my brain would be right, and “I” would be just wrong.

The reductive aspect, then, resolves seeming conflicts and thereby simplifies the territory to be explained once again. But it also plays a central role in supporting the fact / value distinction noted above. Most people think “we,” of course, make distinctions between
facts and values (likely because we take those distinctions to be real in the world). But a keystone claim of the argument of *TML* is that we are incorrect in making this distinction. And that claim draws heavily on evidence that our brain treats facts and values equivalently. Utilizing the aforementioned equivalence, then, there is no conflict between fact and value concepts because “we’ are just wrong; the real “we” – our brains – correctly identifies facts and values as equivalent:

If believing a mathematical equation (vs. disbelieving another) and believing an ethical proposition (vs. disbelieving another) produce the same changes in neurophysiology, the boundary between scientific dispassion and judgments of value becomes difficult to establish. (126)

In other words, the categorical distinctions the mechanics of our brains seem to indicate are more reliable indicators of real, in-the-world distinctions than the ones we voice are. This notion that the “true we” reduces to our brain mechanisms greatly restricts the messy explanations of the relationships of mind and brain.

The text draws more reductive equivalencies between other cognitive processes. In course, knowledge is reduced to / equated with belief, and belief is reduced to / equated with memory. Fine-grained distinctions of cognitive function, for the purposes of *TML’s* explanation, are collapsed together:

While we often make a conventional distinction between “belief” and “knowledge,” these categories are actually quite misleading. Knowing that George Washington was the first president of the United States and believing the statement “George Washington was the first president of the United States” amount to the same thing. (115)
In fact, belief overlaps with certain types of memory, as memory can be equivalent to a belief about the past (e.g., “I had breakfast most days last week”), and certain beliefs are indistinguishable from what is often called “semantic memory” (e.g., “The earth is the third planet from the sun”). (116)

These culminate to help convey an imagined technology for lie detection. The quote in the text is this:

Knowing what a person believes is equivalent to knowing whether or not he is telling the truth. (133)

But because of the conceptual reduction and equivalencies, this amounts to a statement that “Knowing what a [BRAIN] [REMEMBERS] is equivalent to knowing whether or not he/she is telling the truth.” The complex is rendered straightforward, because neuroimaging lie-detection would be centered on simply checking whether utterances and memories match. 62

This discussion of literary treatment of the brain is particularly complex (a topic I address in Chapter 4). Fortunately, TML’s treatment of well-being is not. In service of its conversation-starting project, TML uses well-being as a catch-all and subsumes numerous traditional concerns in the domain of morality under its definition. Well-being of conscious creatures is the only value worth considering; concern about morality reduces to a concern about well-being. This point is made ad nauseam, e.g.:

62 I confess that the reduction here is so extensive as to force me to recall the caveat about blindly imitating Harris. Though clear, this account of prospective lie-detection technology seems overly reductive. The point here still is to demonstrate how Harris achieves his clarity, and severely restricting scope is an effective way to do that—even if it amounts to good communication of questionable science.
If this notion of “ought” means anything we can possibly care about, it must translate into a concern about the actual or potential experience of conscious beings (either in this life or in some other). (38)

And yet “better” must still refer, in this context, to positive changes in the experience of sentient creatures. (40)

I think we can know, through reason alone, that consciousness is the only intelligible domain of value. (32)

Once we see that a concern for well-being (defined as deeply and as inclusively as possible) is the only intelligible basis for morality and values (28)

And “morality” – whatever people’s associations with this term happen to be – really relates to the intentions and behaviors that affect the well-being of conscious creatures. (32-33)

… moral concerns translate into facts about how our thoughts and behaviors affect the well-being of conscious creatures like ourselves. (62)

What we can do is try, within practical limits, to follow a path that seems likely to maximize both our own well-being and the well-being of others. This is what it means to live wisely and ethically. (85)

And the text makes a general statement about the physical inputs that determine well-being – “Human well-being depends entirely on states of the world and states of the human brain” (2) – such that well-being entirely reduces matches between brains and the world. This argues for a physical / material understanding of well-being: values translate into facts, and well-being is simply a natural phenomenon, both of which indicate well-being’s appropriateness for scientific study:

questions about values—about meaning, morality, and life’s larger purpose—are really questions about the well-being of conscious creatures. Values, therefore, translate into facts that can be scientifically understood: regarding positive and negative social emotions, retributive impulses, the effects of specific laws and social institutions on human relationships, the neurophysiology of happiness and suffering, etc. (1-2)
Human and animal well-being are natural phenomena. As such, they can be studied, in principle, with the tools of science and spoken about with greater or lesser precision. Do pigs suffer more than cows do when being led to slaughter? Would humanity suffer more or less, on balance, if the United States unilaterally gave up all its nuclear weapons? Questions like these are very difficult to answer. (41-42)

Next, whether by virtue of overzealous thesaurus use or an intentional effort, _TML_ continues the discussion of well-being by using it as an umbrella concept for a multitude of classic moral concepts. Well-being is claimed to encompass, for example, human flourishing (22), long-term happiness and freedom from suffering (22), satisfaction (40), maximizing happiness of any kind (74), justice (80), and self-actualization (84). Even when one may think one is not addressing morality in terms of its relationship to well-being, _TML_ insists that one unknowingly is, even if one is advocating a religious morality (!):

> While each individual’s search for happiness may not be compatible in every instance with our efforts to build a just society, we should not lose sight of the fact that societies do not suffer; people do. The only thing wrong with injustice is that it is, on some level, actually or potentially bad for people. (80)

Even within religion, therefore, consequences and conscious states remain the foundation of all values. (62)

Religious notions of morality, therefore, are not exceptions to our common concern for well-being. And all other philosophical efforts to describe morality in terms of duty, fairness, justice, or some other principle that is not explicitly tied to the well-being of conscious creatures, draw upon some conception of well-being in the end. (33)

And, of course, hierarchies surround the well-being concept at the societal level, too:
The moment one begins thinking about morality in terms of well-being, it becomes remarkably easy to discern a moral hierarchy across human societies. (60)

Upon review, one finds strikingly little detail about the measurement of well-being in *TML*. In fact, after the litany of references to it as a central concept and metric for a science of morality, the text contains a qualifying admission:

> We can mean many things when using words like “happiness” and “well-being.” This makes it difficult to study the most positive aspects of human experience scientifically. In fact, it makes it difficult for many of us to even know what goals in life are worth seeking. (183)

This is a puzzling statement against the backdrop of dichotomies, analogies to health, and hierarchical structures that seem to put these very concepts at the center of *TML*’s theory. But with a different view with a mind to science communication, the fact that Harris is willing to admit that well-being is not really so simple is indicative of the use of a simplifying rhetoric throughout the text, with this topic and others. This simplicity may have come at the cost of accuracy, but with a qualifier like this, Harris demonstrates that one can use all of these textual aspects in the positive, imitable category to limit the range of science necessary to explain and thereby give a clear orientation if not accurate understanding of a complex topic like a science of morality. He is by no means solving the classic problem of balancing clarity and accuracy – he may very well have overdone it at moments in *TML* – but his text gives a clear example of at least one way of addressing it for purposes of science communication.
Negative Aspects: Approaches to Take Under Consideration and Differentiate From

Shifting gears, the following aspects represent negative textual aspects that interfere with the function of TML as popular science communication. Science communicators are advised to not only avoid these techniques but to take their presence in the popular science communication milieu under consideration. It is not enough, for example, to avoid the first category of audience dichotomization and exclusion; one should actively engage efforts at inclusion. Most of these negative aspects are fairly straightforward in their deleterious effects, but I will qualify the examples where warranted.

Negative Aspects 1: Audience Dichotomization

So it’s Us … v Them … over and over again.

- LCD Soundsystem, Us v. Them

The negative aspect that leaps off the pages of TML is the continuous effort at audience dichotomization. It is perhaps not surprising that Harris would differentiate himself from religious groups, but the differentiation extends to numerous domains beyond this. On rare occasion, the dichotomization is innocent enough. It is simply an effort to provide a taxonomy of ideologies and worldviews. In line with the typically reductive and/or black-and-white approach of TML’s scientific approach, nuance is dropped in favor of cleanly delineated categories. However, in these cases, the categorization is not of things to be explained but of people and potential readers. And the dichotomization is not so innocent in the negative characterizations it makes of those groups.
This dichotomization takes two forms. First, the text often uses a typical framing of an “us v. them” orientation. Along numerous axes – religiosity, political orientation, science, etc. – various groups who differ from an ever-narrowing “us” (centered around Harris) are identified as foils. TML repeatedly otherizes these groups by describing them with exotic adjectives (“bizarre,” “strange,” “alien,” etc.) or just using “they,” “them,” “those people,” etc. as pronouns for the groups (in opposition to an implied or at times explicit “we”). The second form is a variant of the first in which a dichotomy is established, again along any one of a number of axes, but the “us” is differentiated from the entirety of the axis. The world is divided into those who think this way and those who think that with both groups typically being denigrated / ridiculed.

Here are two examples of the first form in which groups are otherized:

Can we say that the Albanians are morally wrong to have structured their society in this way? Is their tradition of blood feud a form of evil? Are their values inferior to our own? (1)

I think it is quite clear that members of the Taliban are seeking well-being in this world (as well as hoping for it in the next). But their religious beliefs have led them to create a culture that is almost perfectly hostile to human flourishing. Whatever they think they want out of life—like keeping all women and girls subjugated and illiterate—they simply do not understand how much better life would be for them if they had different priorities. (36-37)

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63 And again with apologies to Ben Hurlbut, the “who is the we?” question here is answered: Harris plus others who are decidedly NOT “those people.”

64 In typical fashion – and in line with The Edge’s “Third Culture” rhetoric – Harris offers a privileged path through the darkness.

65 This is not to say that Albanians or Taliban members are likely audiences for the text, just that these quotes exemplify the “us/Them” motif.
And here is a pair that exemplifies the treatment of dichotomies along political lines and science/religious lines:

A shared belief in the limitations of reason lies at the bottom of these cultural divides. Both sides believe that reason is powerless to answer the most important questions in human life … Scriptural literalism, intolerance of diversity, mistrust of science, disregard for the real causes of human and animal suffering—too often, this is how the division between facts and values expresses itself on the religious right … Multiculturalism, moral relativism, political correctness, tolerance even of intolerance—these are the familiar consequences of separating facts and values on the left. (4-5)

It is precisely such instances of learned confusion (one is tempted to say “learned psychopathy”) that lend credence to the claim that a universal morality requires the support of faith-based religion. The categorical distinction between facts and values has opened a sinkhole beneath secular liberalism—leading to moral relativism and masochistic depths of political correctness. Think of the champions of “tolerance” who reflexively blamed Salman Rushdie for his fatwa, or Ayaan Hirsi Ali for her ongoing security concerns, or the Danish cartoonists for their “controversy,” and you will understand what happens when educated liberals think there is no universal foundation for human values. Among conservatives in the West, the same skepticism about the power of reason leads, more often than not, directly to the feet of Jesus Christ, Savior of the Universe. The purpose of this book is to help cut a third path through this wilderness. (46)

These splits and accusations against audience would not be so problematic were it not for the exclusionary language that so often drives and accompanies them. Unlike the efforts at dichotomy and juxtaposition with a mind to clarity referenced above, these audience designations are made with a mind to deny various viewpoints a seat at the proverbial table. The attitude toward opposing views permeates the text but is explicitly stated at times:
For the moment, it seems sufficient to notice that in any domain of knowledge, we are free to say that certain opinions do not count … Why should it be any different on the subject of human well-being? (19)

On the subject of morality, as on every other subject, some people are not worth listening to. (205)

Again, lest it seem like this is merely a repeated emphasis within *TML* that religious views are out of bounds, the exclusionary language and ridicule of opposing viewpoints extends to fellow professionals and experts taking intellectual approaches to morality. In an endnote that excuses his general refusal to engage with philosophical understandings of morality and ethics (elsewhere and within the pages of *TML*), Harris somewhat childishly belittles the contribution of moral philosophers as boring:

Many of my critics fault me for not engaging more directly with the academic literature on moral philosophy. There are two reasons why I haven’t done this: First, while I have read a fair amount of this literature, I did not arrive at my position on the relationship between human values and the rest of human knowledge by reading the work of moral philosophers; I came to it by considering the logical implications of our making continued progress in the sciences of mind. Second, I am convinced that every appearance of terms like “metaethics,” “deontology,” “noncognitivism,” “antirealism,” “emotivism,” etc., directly increases the amount of boredom in the universe. (197)

While it is doubtful that this comment increases the amount of hilarity in the universe, it does interact with previous designations of science (see Chapter 2) to exclude moral philosophy from counting as rational inquiry for a fairly pathetic reason. More importantly for the commentary here, it interacts with the recurring exclusionary language of the text to give a distinct impression that moral philosophers are “not worth listening to.” They are an “other” that will not count among the moral experts that *TML*
envisions. It is not clear why they ought to engage this text at all, and it is not clear that Harris cares to engage them. Moral philosophers (and presumably, those interested in moral philosophy more generally) do not count among the *science* lay audience that the text at least indirectly purports to address.

Exclusions like this are numerous in the text. It will suffice at this point to list some of the other instances of audience dichotomization from *TML*.

For the primary example of “religion,” the obvious variety within the out-group is collapsed:

> If the basic claims of religion are true … (25)

> In the interests of both simplicity and relevance, I tend to keep my references to religion focused on Christianity, Judaism, and Islam. Of course, most of what I say about these faiths applies to Hinduism, Buddhism, Sikhism, and to other religions as well. (195)

The collapsing of out-group functions to help characterize this collective religious *them* in order to subsequently differentiate from it:

> The inescapable fact is that religious people are as eager to find happiness and to avoid misery as anyone else: many of them just happen to believe that the most important changes in conscious experience occur after death (i.e., in heaven or in hell). (33)

> Because most religions conceive of morality as a matter of being obedient to the word of God (generally for the sake of receiving a supernatural reward), their precepts often have nothing to do with maximizing well-being in this world. Religious believers can, therefore, assert the immorality of contraception, masturbation, homosexuality, etc., without ever feeling obliged to argue that these practices actually cause suffering.
They can also pursue aims that are flagrantly immoral, in that they needlessly perpetuate human misery, while believing that these actions are morally obligatory (63)

... as we see in the disparate and often contradictory precepts that issue from the world’s major religions (77)

Secular liberalism is propped up in opposition to these religious takes and characterized as its own group from which to be differentiated:

not knowing what is right—or that anything can ever be truly right—often leads secular liberals to surrender their intellectual standards and political freedoms with both hands. (5)

Such cultural relativism became so entrenched that by 1939 one prominent Harvard anthropologist wrote that this suspension of judgment was “probably the most meaningful contribution which anthropological studies have made to general knowledge.” Let’s hope not. In any case, it is a contribution from which we are still struggling to awaken. (20)

Given how deeply disposed we are to make universal moral claims, I think one can reasonably doubt whether any consistent moral relativist has ever existed. (45)

[following an argument at a conference about relativistic morals] Such opinions are not uncommon in the Ivory Tower. (44)

Political conservatism, too, is explicitly differentiated from Harris’s rational approach:

Consider political conservatism: this is a fairly well-defined perspective that is characterized by a general discomfort with societal change and a ready acceptance of social inequality ... Surely we can say that [political conservatism,] a belief system known to be especially beholden to dogmatism, inflexibility, death anxiety, and a need for closure[,] will be less principled, less warranted, and less responsive to reason and evidence than it would otherwise be. (124-25)

Again, the scientific community is unsurprisingly also held up in opposition to religion:
And science and religion—being antithetical ways of thinking about the same reality—will never come to terms. (10)

The scientific community, though, is described as secular and liberal, and this group membership supposedly colors their ability to recognize the truth of the impossibility of reconciliation with religious views. Scientists are described as incorrect in being overly apologetic to religion and “the fantasies of a prior age.” This attitude permeates the political structure of science, too, as Harris notes that prominent power players like the editors of *Nature* not only acquiesce to religious scientists like Francis Collins but cave to religiously-minded funding bodies like The Templeton Foundation:

> The scientific community is predominantly secular and liberal—and the concessions that scientists have made to religious dogmatism have been breathtaking … have generally accepted Stephen J. Gould’s doomed notion of “nonoverlapping magisteria”—the idea that science and religion, properly construed, cannot be in conflict because they constitute different domains of expertise. (6)

> I witnessed scientists giving voice to some of the most dishonest religious apologies I have ever heard. (23)

> … have managed to convince some scientists and science journalists that it is wise to split the difference between intellectual integrity and the fantasies of a prior age. (24)

> True to form, Nature has adopted an embarrassingly supine posture with respect to Templeton as well. (169)

In sum, the extensive dichotomization of, characterization of, and differentiation from out-groups in *TML* gives an impression of Harris as an individual in a bunker entrenched against a world that opposes him—a world full of groups wildly incorrect in their views—on all sides. Even his engagement with fellow scientists and their work (e.g., Greene (85),
Haidt (86), Ball (138), Miller and Brown (173), Mooney and Kirshenbaum (175)) gets embroiled in accusations of their having misinterpreted their own findings and back and forth rebuttals of any criticisms they have levied against him. The oppositional orientation of TML cannot help but be perceived by its audience and betrays an exclusionary and alienating attitude that overwhelms its tone. This is another factor that harms TML’s effectiveness as popular science communication and again, is not only not recommended, but communicators would do well to counter its exclusion with efforts of inclusion.

**Negative Aspects 2: Omission of Contextual / Epistemological Frameworks**

Concerns about insufficient background information are complicated in that it would be absurd to require that every instance of science communication be a back-to-basics introductory text. Nonetheless, TML is egregious in its omission of even the most basic orientation to the bulk of its scientific content. Because of the neuroscientific focus of the book, most of this missing context involves the brain. Absent are what is meant by talk of “the level of the brain,” meaningful orientation to neuroanatomy, and mechanisms of regulation of brain processes. I’ll split the discussion of each of these facets below.

**Brain States, or, The Level of the Brain**

The fundamental problem with clarity and absent epistemological framework with regard to description of the brain’s role in morality is quite plain. It involves the absence from the text of what is meant by a “brain state” or “the level of the brain” – whether this is a
physical arrangement or some sort, an electrical arrangement, a pattern of blood flow, a pattern of neuronal activation, etc. – both of which feature prominently in TML’s explanations of neuroscience. The phenomenon occurs throughout; here are some examples of the references to neurologic science in TML:

… that lawfully relates to states of the human brain, to human behavior, and to states of the world (18)

… the sciences of mind are largely predicated on our being able to correlate first-person reports of subjective experience with third-person states of the brain. This is the only way to study a phenomenon like depression: the underlying brain states must be distinguished with reference to a person’s subjective experience. (30)

brains sufficiently similar … expressed at the level of their brains (61)

Where a person finds himself on this continuum of possible states will be determined by many factors—genetic, environmental, social, cognitive, political, economic, etc.—and while our understanding of such influences may never be complete, their effects are realized at the level of the human brain. (64)

As with any human ability, these gradations must be expressed at the level of the brain. (99)

… the result of events arising in the brain of another human being. (107)

… understanding human well-being at the level of the brain might very well offer some answers to the most pressing questions of human existence (115)

The concern here is that without some indication as to what a brain-state or the level of the brain is, explanations hinging on these terms remain opaque. This is particularly evident given previously mentioned equations of persons with their brains; it is not clear what this talk of different levels means. The text even
contains admissions of the difficulty of building a science of morality from these concepts:

There are no aspects of brain function that evolved to hold democratic elections, to run financial institutions, or to teach our children to read. We are, in every cell, the products of nature—but we have also been born again and again through culture. Much of this cultural inheritance must be realized differently in individual brains. The way in which two people think about the stock market, or recall that Christmas is a national holiday, or solve a puzzle like the Tower of Hanoi, will almost surely differ between individuals. This poses an obvious challenge when attempting to identify mental states with specific brain states. (119)

Experiences of this kind reveal how difficult it can be to discuss the subject of human well-being. Communication on any subject can be misleading, of course, because people often use the same words quite differently. Talking about states of mind poses special difficulties, however. (182)

This would appear to be the case even if one knew what was intended by “brain state.”

This lack of definition betrays an assumption of understanding on the part of the audience that popular science communication simply cannot afford to make.

Brain Anatomy

A similarly glaring omission in TML is the lack of any orientation to the brain anatomy in the text. It will suffice to note that the litany of statements identifying the location of “brain activity” (itself a nebulously defined term) lack grounding in terms of an initial “brain map” that would orient the reader to relevance of said locations. There is some attempt to indicate prior functions associated with particular regions of the brain, but (as discussed in the flowing sub-section) what these associations stem from is left unstated.
The level of explanation stops at something like “activity X is associated with “this region on the brain” which is also associated with activity Y.” Microscopic function of brain components fares no better; technical terms are used, but no orientation to what these terms might mean is to be found. Some examples follow.

First, there are identifications of brain region that lack context altogether:

The brain regions involved in moral cognition span many areas of the prefrontal cortex and the temporal lobes. (91)

… we know from neuroimaging studies that cooperation is associated with heightened activity in the brain’s reward regions (92)

Further neuroimaging work suggests that psychopathy is also a product of pathological arousal and reward. People scoring high on the psychopathic personality inventory show abnormally high activity in the reward regions of their brain (in particular, the nucleus accumbens) in response to amphetamine and while anticipating monetary gains. (98)

we found greater signal in the anterior cingulate cortex (ACC) when subjects could not assess the truth-value of a proposition (154)

And even when the text does make some effort to identify what the associations of a particular region are, it makes no effort to contextualize these other functions nor explain their mechanisms, e.g., how the frontal lobes “allow us” to do anything or “believe or disbelieve” anything. This assault of terminology cannot carry much meaning for anyone beyond an audience that, again, is assumed to already have a thorough understanding and framework from which to appreciate such claims. This is, of course, not to say that the following claims are incorrect, just that they are relatively meaningless without the broader system in which to place them:
The regions of the brain that govern judgments of right and wrong include a broad network of cortical and subcortical structures. The contribution of these areas to moral thought and behavior differs with respect to emotional tone: lateral regions of the frontal lobes seem to govern the indignation associated with punishing transgressors, while medial frontal regions produce the feelings of reward associated with trust and reciprocation. (93)

The medial prefrontal cortex (MPFC) is central to most discussions of morality and the brain. Injuries here have been associated with a variety of deficits including poor impulse control, emotional blunting, and the attenuation of social emotions like empathy, shame, embarrassment, and guilt. When frontal damage is limited to the MPFC, reasoning ability as well as the conceptual knowledge of moral norms are generally spared, but the ability to behave appropriately toward others tends to be disrupted. (93)

Neuroscientist James Blair and colleagues suggest that psychopathy results from a failure of emotional learning due to genetic impairments of the amygdala and orbitofrontal cortex, regions vital to the processing of emotion. (99)

For a physical system to be capable of complex behavior, there must be some meaningful separation between its input and output. As far as we know, this separation has been most fully achieved in the frontal lobes of the human brain. Our frontal lobes are what allow us to select among a vast range of responses to incoming information in light of our prior goals and present inferences. Such “higher-level” control of emotion and behavior is the stuff of which human personalities are made. Clearly, the brain’s capacity to believe or disbelieve statements of fact—You left your wallet on the bar; that white powder is anthrax; your boss is in love with you—is central to the initiation, organization, and control of our most complex behaviors. (118-119)

Religious thinking was associated with greater signal in the anterior insula and the ventral striatum. The anterior insula has been linked to pain perception, to the perception of pain in others, and to negative feelings like disgust. The ventral striatum has been frequently linked to reward. (153)

As noted, micro-anatomical function does not escape this paucity of contextualization:

The biologist Martin Heisenberg recently observed that some fundamental processes in the brain, like the opening and closing of ion channels and the
release of synaptic vesicles, occur at random, and cannot, therefore, be determined by environmental stimuli. (103)

Admittedly, neuroscience is difficult to explain and likely just is complex in a way that defies simple communication. Its communication may, indeed, take a brain surgeon. But the point of the preceding is that such non-contextualized information is inappropriate for a popular science text. Alleged explanation represents only so much noise when a laundry list of unfamiliar terms is presented and vague accounts of mechanism are cited. That the text pretends that it communicates content reveals untoward assumptions of audience; such incomplete explanation and assumptions of audience are, of course, contraindicated for the broader science communication project.

Mechanisms of Regulation

One last omission haunts the text, and it’s especially problematic for a text that alleges to explain morality via brain function. Put simply, an avalanche of verbs is used, but there is no indication whatsoever as to what brains do to exercise control over or cause the complex behaviors, emotions, ideas, etc., that constitute human experience. Again, this is admittedly a complicated idea – no one has solved the hard problem of consciousness (Chalmers, 1995) just yet – but for a text alleging that we should drop consideration of the human level in deference to “the level of the brain,” TML makes no pretense of indicating just how complex the relationship between those levels is, let alone explaining it.
This starts from the first mention of neuronal regulation in the text, a comment regarding the role of hormones in the brain:

Research on rodents suggests that parental care, social attachment, and stress regulation are governed, in part, by the hormones vasopressin and oxytocin, because they influence activity in the brain’s reward system. (9)

What vasopressin and oxytocin are or do (besides influence) goes unstated (and, as mentioned, the psychological concept of social attachment is similarly left undefined). This is more or less the pattern for all discussion of neural mechanisms:

The regions of the brain that govern judgments of right and wrong include a broad network of cortical and subcortical structures. The contribution of these areas to moral thought and behavior differs with respect to emotional tone: lateral regions of the frontal lobes seem to govern the indignation associated with punishing transgressors, while medial frontal regions produce the feelings of reward associated with trust and reciprocation. (93, emphasis mine)

For a physical system to be capable of complex behavior, there must be some meaningful separation between its input and output. As far as we know, this separation has been most fully achieved in the frontal lobes of the human brain. Our frontal lobes are what allow us to select among a vast range of responses to incoming information in light of our prior goals and present inferences. Such “higher-level” control of emotion and behavior is the stuff of which human personalities are made. Clearly, the brain’s capacity to believe or disbelieve statements of fact—You left your wallet on the bar; that white powder is anthrax; your boss is in love with you—is central to the initiation, organization, and control of our most complex behaviors. (118-119, emphasis mine)

In the second already-cited quote, Harris resorts to anthropomorphizing the brain—claiming it believes things—in order to skirt the issue of having to detail what it

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66 Perhaps they are neuronal lobbyists.
actually does. Other explanations at least refer to some real, quantifiable measurement of
the brain, such as blood flow, glucose consumption, or changes in electric potentials, but
these physical descriptions are rarely made explicit. The text typically (and quite
frequently) lumps them under the catch-all of “activity:”

Most people strongly support sacrificing one person to save five in the first
scenario, while considering such a sacrifice morally abhorrent in the
second. This paradox has been well known in philosophical circles for
years. Joshua Greene and colleagues were the first to look at the brain’s
response to these dilemmas using fMRI. They found that the personal
forms of these dilemmas, like the one described in scenario two, more
strongly activate brain regions associated with emotion. (94, emphasis
mine)

The first neuroimaging experiment done on psychopaths found that, when
compared to nonpsychopathic criminals and noncriminal controls, they
exhibit significantly less activity in regions of the brain that generally
respond to emotional stimuli (95, emphasis mine)

Further neuroimaging work suggests that psychopathy is also a product of
pathological arousal and reward. People scoring high on the psychopathic
personality inventory show abnormally high activity in the reward regions
of their brain (in particular, the nucleus accumbens) in response to
amphetamine and while anticipating monetary gains. (98, emphasis mine)

The list of synonyms that TML attaches to “activity” and “governing” is truly impressive.
All of the following terms are seemingly interchangeable and, per the text, mean the same
thing; none is any better explained than “influence”:

monitor … govern … involved … play a role in (119)
govern … mediate … be involved … control (120)
monitoring … processing … linked … connected to … associated with
(121)

67 It would be more clear, in my view, to say people believe things using their brain. This is a controversial topic, but
the idea is that the brain no more believes things than eyes see things (though we, of course, use them to see).
engaged (122)
shows an increased propensity for (128)
linked to (135)
depends on (158)
neural correlate of (189)

As with the descriptions of neuroanatomy, it seems that only one of two things can be going on. One, neuroscience really is this vague in its description of how the brain effects phenomena in the realm of human experience, and therefore any science communicator would be doomed in trying to convey the meaning of these terms to a broad lay audience. Two, Harris is assuming that his audience is familiar with the meaning of these terms, what fMRI measures, etc., such that such explanations need not be made. Even if the former is the case, I contend that an honest effort at communication would involve referencing the uncertainty embedded in the science. To do otherwise is to leave an already unfamiliar audience in the proverbial dark as to what a neural account of morality even is; such ineffective communication is obviously to be avoided.

Negative Aspects 3: Rhetorical Questions (and Assumed Values)

Rhetorical Questions

TML is peppered with rhetorical questions:
However, if we are actually concerned about human well-being, and would treat children in such a way as to promote it, we might wonder whether it is generally wise to subject little boys and girls to pain, terror, and public humiliation as a means of encouraging their cognitive and emotional development. Is there any doubt that this question has an answer? (3)

Clearly, people can adopt a form of life that needlessly undermines their physical health—as the average lifespan in many primitive societies is scarcely a third of what it has been in the developed world since the middle of the twentieth century. Why isn’t it equally obvious that an ignorant and isolated people might undermine their psychological well-being or that their social institutions could become engines of pointless cruelty, despair, and superstition? Why is it even slightly controversial to imagine that some tribe or society could harbor beliefs about reality that are not only false but demonstrably harmful? (21)

But what if advances in neuroscience eventually allow us to change the way every brain responds to morally relevant experiences? What if we could program the entire species to hate fairness, to admire cheating, to love cruelty, to despise compassion, etc. Would this be morally good? Again, the devil is in the details. Is this really a world of equivalent and genuine well-being, where the concept of “well-being” is susceptible to ongoing examination and refinement as it is in our world? If so, so be it. What could be more important than genuine well-being? (84)

While there is nothing illicit about the use of this aspect per se, Harris’s use of rhetorical questions is problematic by virtue of the (lack of) honesty of the questions and assumptions of audience required for the answer to the question be supposedly self-evident.

In several instances the rhetorical questions of TML are simply not honest questions. They are used to punctuate claims and stand as a casual “come on, you know what I mean” in lieu of an actual argument. This requires that the audience indeed know what

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68 I am not, for instance, asserting something like “Rhetorical questions! Huh! Good God, y’all; what are they good for?”
Harris means, that the reader already have accepted the insular system of belief implied by the questions. The claim behind the rhetorical question has in most cases already been made and the audience agreement assumed such that the question(s) itself is gratuitous. In a couple of cases, the question even appears to undermine the argument.

There is little doubt, for instance, that Harris does not really wonder any of the following regarding the extremes established by The Good Life and The Bad Life; the paragraph of questions follows an argument framed by the very extremes mentioned here. So the questions are gratuitous and, worse, stand-ins for what should be an argument regarding the nuanced space between those extremes:

Imagine someone who spends all his energy trying to move as many people as possible toward the Bad Life, while another person is equally committed to undoing this damage and moving people in the opposite direction: Is it conceivable that you or anyone you know could overlook the differences between these two projects? Is there any possibility of confusing them or their underlying motivations? And won’t there necessarily be objective conditions for these differences? If, for instance, one’s goal were to place a whole population securely in the Good Life, wouldn’t there be more and less effective ways of doing this? How would forcing boys to rape and murder their female relatives fit into the picture? (17)

In another case, the text piles unnecessary questions on after an argument against non-scientific epistemology. The salience of these questions rests heavily on the idea that the science-invested audience Harris is assuming already holds “alternative epistemologies” in disrepute. The questions, and particularly their sarcastic tone, represent argument not so much as they represent intellectual bullying; the lack of respect is palpable.
Is there really such a thing as a feminist or multicultural epistemology? Harding’s case is not helped when she finally divulges that there is not just one feminist epistemology, but many. On this view, why was Hitler’s notion of “Jewish physics” (or Stalin’s idea of “capitalist biology”) anything less than a thrilling insight into the richness of epistemology? Should we now consider the possibility of not only Jewish physics, but of Jewish women’s physics? How could such a balkanization of science be a step toward “strong objectivity”? (47)

A challenge to Jonathan Haidt’s theory of moral psychology – “Are these people “morally motivated,” in Haidt’s sense, or just morally confused?” (90) – follows the argument mentioned in Chapter 2 that Haidt’s “first project science” is irrelevant to Harris’s prescriptive science of morality. I.e., Harris has already insisted that “these people” are indeed “morally confused.” This argument regarding the disconnect between the projects goes unmentioned here; again, the audience is assumed to already agree that Harris’s variant of morality regarding well-being is correct to the point that standard accounts from moral psychology can be summarily dismissed.

The following two examples are interesting in that they are rhetorical questions about specific claims that no one in particular is making (at least no one that the text identifies):

for if, from the point of view of the brain, believing “the sun is a star” is importantly similar to believing “cruelty is wrong,” how can we say that scientific and ethical judgments have nothing in common? (122)

But is it really true to say that every degree of risk tolerance will serve our purposes equally well as we struggle to build a global civilization? Does Burton really mean to suggest that there is no basis for distinguishing healthy from unhealthy—or even suicidal—attitudes toward risk? (128)
In the first, the question almost undermines the argument – no one has stated that scientific and ethical judgments have *nothing* in common, just that they are not the same. They minimally have in common the fact of being propositions that can be believed. Harris’s question highlights that the equivalent treatment by the brain just establishes that they have *something* in common. But this was never contested, and the question practically reminds the reader of that fact and that the new evidence might not really bear on the actual controversy.

The second example comes in a discussion of Burton’s assertions regarding genetic determinants of risk tolerance. Burton notes that several responses to ethical problems depend on risk tolerance such that such that while we think we are being objective, we are actually beholden to genetic factors that drive our intuitions about acceptable risk. This is not, however, an argument that there are not risks that we may widely agree are “suicidal.” Here Harris again wants to ask a question amounting to “Come on, we all know suicidal risk when we see it, how can that not be objective?” But Burton is not making claims about risk tolerance at the extremes, so this challenge to his sense of risk tolerance’s relative subjectivity is spurious.

In sum, while rhetorical questions may add flair, the above-mentioned drawbacks interfere greatly with communication with a broad popular audience. Their use is not recommended, and certainly discouraged in combination with the audience assumptions TML seems to make.

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69 E.g., few would disagree that a 99.9% chance of death in pursuit of a popsicle is probably not worth it.
Assumptions of Shared Values

Related to its rhetorical questions are *TML’s* implied assumptions of reader values. Assertions throughout the text rely on the implicit premise of the reader sharing a particular value with Harris. This is evident when the text alludes to speculations about others’ intuitions or what whole groups would think. It is striking when Harris blithely waves away long-standing moral controversies by citing a solution Harris claims to be obvious.

For example, in support of the argument for the appropriateness of a moral realist, consequentialist scientific framework for understanding morality, the text draws on a claim about “many of our intuitions:”

> While moral realism and consequentialism have both come under pressure in philosophical circles, they have the virtue of corresponding to many of our intuitions about how the world works. (62)

This fact is un-cited\(^70\) and patently relies on readers sharing such intuitions, particularly since previous arguments in the text allude to the fact that intuitions are often wrong, and that a consensus does not bear on truth. There are other such speculative claims about intuitions and how we “would want to live:”

> I think that most of us will want our mental states to be coupled, however loosely, to the reality of our lives. (84)

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\(^70\) It is an empirical question what “many of our moral intuitions are,” but the language here is ambiguous either way. Does this mean we have multiple intuitions about morality and many of them are consequentialist ones, or does it mean that we all have moral intuitions and many of us have intuitions that are consequentialist? It is not clear from the text. And either way, we have many deontological intuitions, too, so this seems to be a trite observation.
This comment comes in the course of a science fiction scenario about disconnecting brain-states from external world circumstances. (The logic is that if well-being depends on brain-states, that if we could dictate these brain-states with some imagined brain science and thereby guarantee maximal well-being independent of traditional real-world considerations, would we be obligated to do so?). This, of course, is a classic literary topic found in the *soma* and genetic engineering of *Brave New World* (Huxley, 1932) and elsewhere, but Harris would resolve this dilemma between reality and happiness by relaying the intuition – one that he presumes his audience shares – that we would rather stick with reality.

Despite Harris’s thoroughly documented misgivings about religion, *TML*’s arguments presume to comment on the intuitions and underlying motivations of religious people, too. In collapsing their moral concerns into concerns for harm, the text asserts:

> Such people almost surely believe that some harm could come to them or to their tribe as a result of such sacrileges (89)

And for good measure, relies on audience-shared detestation of religion and provides no argument for the great suffering caused by belief in souls:

> Could thinking about the mind as the product of the physical brain diminish our compassion for one another? While it is reasonable to ask this question, it seems to me that, on balance, soul/body dualism has been the enemy of compassion. (110)
Finally, and perhaps most egregiously, Harris dismisses the entire complexity of debates in America over abortion and stem-cell research as entirely stemming from religious misconception. Fewer assumptions of popular lay audience beliefs could be more ill-founded than the idea that people will largely agree that debates over abortion are “utterly straightforward.” This is an extreme claim, even for Harris:

The belief that the soul enters the zygote at (or very near) the moment of conception leads to spurious worries about the fate of undifferentiated cells in Petri dishes and, therefore, to profound qualms over embryonic stem cell research. (171)

Concern over human embryos smaller than the period at the end of this sentence—when, for years they have constituted one of the most promising contexts for medical research—is one of the many delusional products of religion that has led to an ethical blind alley, and to terrible failures of compassion. While Collins appears to support embryonic stem-cell research, he does so after much (literal) soul searching and under considerable theological duress. Everything he has said and written about the subject needlessly complicates an ethical question that is—if one is actually concerned about human and animal well-being—utterly straightforward. (171)

Hopefully the point has been adequately illustrated. TML contains an excess of assumptions of audience in the course of making its arguments. The problem is not that these arguments are illogical or draw incorrect conclusions. It is that they rely entirely on the audience sharing their otherwise unfounded premises. To the extent that these premises represent assumed values – particularly secular scientist values – using rhetorical questions and assumptions of audience value as a rhetorical aspect in modes of science communication is ill-advised to a fault. Harris errs badly with this style, and avoiding his technique as well as disassociating popular scientific writing from this level of in-group assumption is recommended if not mandatory.
Negative Aspects 4: Overt Aggression / Irony

The final rhetorical aspect that I classify under the negative category is the pervasive use of an aggressive tone, sarcasm, and irony in *TML*. Harris is a notoriously caustic writer, and this has certainly garnered him attention within his explicitly polemical anti-religious texts. Whether this is appropriate and/or effective in that domain is debatable. But I do not take it to be effective in this domain if the aim of a text is to engage popular audiences whose membership overlaps that of the groups Harris so callously attacks. The broader science communication project is by nature an inclusive project – it aims to improve the science/tific literacy of everyone – so it should go without saying that the inherently exclusionary tone involved in this aspect of Harris’s work is antithetical to the project and imprudent.

Per usual, many of the invectives of *TML* are hurled at religious people and organizations. But these groups are not Harris’s sole targets. He antagonizes any variety of person who would disagree with his argument and dismisses their criticism as beneath him. E.g., in response to concerns about imprecision within the concept and definition of human health, Harris states, “Is it possible to voice such doubts in human speech? Yes. But that doesn’t mean we should take them seriously” (36). In anticipation of challenges to the capacity of science to adequately capture the whole of human experience, Harris quips:
Charges of “scientism” cannot be long in coming. No doubt, there are still some people who will reject any description of human nature that was not first communicated in iambic pentameter. (46, emphasis mine)

This characterization of those who would hold that (to my view, and at least on face legitimate) concern is a biting reinforcement of the Us v. Them dynamics noted above. This sort of mocking caricature of groups with opposing views does not engage them and gives every sign of Harris’s unwillingness to do so. Needless to say, refusing to engage opposing views is inimical to engaging broad audiences where these views will undoubtedly be found. That Harris refuses to engage so many different kinds of opposing views and adopts this sarcastic attitude is especially problematic for conception of his work as an act of or model for popular science communication.

The extent of verbal targets is impressive. As referenced, one of the first endnotes in chapter one of TML sets the tone by disparaging the work of moral philosophers:

Second, I am convinced that every appearance of terms like “metaethics,” “deontology,” “noncognitivism,” “antirealism,” “emotivism,” etc., directly increases the amount of boredom in the universe. (197)

Philosophers and ethicists would seem to get off lightly, though. Harris pulls no punches with his favorite target, the religious faithful. Below are several examples of Harris’s evident contempt, delivered via sarcasm, irony or straight-ahead name-calling:

Many assert that, while they can get along just fine without an imaginary friend, most human beings will always need to believe in God. (25, emphasis mine)
So how much time should we spend worrying about such a transcendent source of value? I think the time I will spend typing this sentence is already too much. (32)

Of course, it seems profoundly unlikely that our universe has been designed to reward individual primates for killing one another while believing in the divine origin of a specific book. (63)

It is precisely such instances of learned confusion (one is tempted to say “learned psychopathy”) that lend credence to the claim that a universal morality requires the support of faith-based religion. (46, emphasis mine)

Needless to say, much of this lunacy has spread in the name of Christianity. (129)

The boundary between mental illness and respectable religious belief can be difficult to discern … there is no reason to believe that any of them suffer from a mental illness. It is obvious, however, that they suffer from religion. (158)

A child can be born with his underdeveloped yet living twin lodged inside him—a condition known as fetus in fetu. Occasionally this condition isn’t discovered until years after birth, when the first child complains about having something moving around inside his body. This second child is then removed like a tumor and destroyed. As God seems to love diversity, there are countless permutations of this condition, and twins can fuse in almost any way imaginable. (172, emphasis mine)

A close second to the hostile commentary on religion comes in TML’s treatment of proponents of a variety of humanistic academic disciplines, including anthropology, sociology, feminism, and any discipline that would hint at theories of moral relativism (which, incidentally, would again include those boring moral philosophers). Acceptance of views that would not impose a central (read: Western) moral realism on other cultures is repeatedly ridiculed:

… one prominent Harvard anthropologist wrote that this suspension of judgment [of other cultures’ moral systems] was “probably the most meaningful
contribution which anthropological studies have made to general knowledge.”

Let’s hope not. (20)

Thus, even the most bizarre and unproductive behaviors … have been rationalized, or even idealized, in the fire-lit scribblings of one or another dazzled ethnographer (20, emphasis mine)

Many of these people also claim that a scientific foundation for morality would serve no purpose in any case. They think we can combat human evil all the while knowing that our notions of “good” and “evil” are completely unwarranted. It is always amusing when these same people then hesitate to condemn specific instances of patently abominable behavior. I don’t think one has fully enjoyed the life of the mind until one has seen a celebrated scholar defend the “contextual” legitimacy of the burqa, or of female genital mutilation, a mere thirty seconds after announcing that moral relativism does nothing to diminish a person’s commitment to making the world a better place. (27, emphasis mine)

While I do not think anyone sincerely believes that this kind of moral skepticism makes sense, there is no shortage of people who will press this point with a ferocity that often passes for sincerity. (32, emphasis mine)

*TML*’s account of Harris’s encounter with an unnamed moral relativist at an academic conference underlines just how disdainful he is toward proponents of those views. He has no qualms about relaying a narrative of his antagonistic and dismissive attitude (and his refusal to engage another opposing view) demonstrated in an in-person conversation! His own account is self-incriminating of this attitude, implying that he does not see the communicational attitude as problematic. The account starts with a challenge about whether ritual enucleation would be intrinsically and objectively wrong; it continues with sarcastic rendering of her views and a smug description of what assumes he takes to be humorous behavior (but which is also a representative moment in which he literally walks away from a proponent of a view that does not match his own):

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71 Harris recalls the dialog: “Okay … Let’s make it even simpler. What if we found a culture that ritually blinded every third child by literally plucking out his or her eyes at birth, would you then agree that we had found a culture that was needlessly diminishing human well-being?” (44)
She: It would depend on why they were doing it.
Me [slowly returning my eyebrows from the back of my head]: (44)

While listening to her talk, as yet unaware of her liberal views on compulsory veiling and ritual enucleation, I thought her slightly overcautious, but a basically sane and eloquent authority on scientific ethics. I confess that once we did speak, and I peered into the terrible gulf that separated us on these issues, I found that I could not utter another word to her. In fact, our conversation ended with my blindly enacting two neurological clichés: my jaw quite literally dropped open, and I spun on my heels before walking away. (44)

*TML*’s other treatments of feminist and other liberal academic approaches is no less insulting nor less sarcastic:

Harding recommends that scientists immediately give “feminist” and “multicultural” epistemologies their due. First, let’s be careful not to confuse this quite crazy claim for its sane cousin … (47)

And if political inclusiveness is our primary concern, where could such efforts to broaden our conception of scientific truth possibly end? Physicists tend to have an unusual aptitude for complex mathematics, and anyone who doesn’t cannot expect to make much of a contribution to the field. Why not remedy this situation as well? Why not create an epistemology for physicists who failed calculus? Why not be bolder still and establish a branch of physics for people suffering from debilitating brain injuries? (48, emphasis mine)

Scientists with different interpretations of a science of morality (and particularly those who would adopt a sympathetic attitude towards religion) fare only slightly better. Even in the course of casual description, *TML* uses sarcastic questions and derogatory descriptions to address science itself that would attempt to incorporate religious understanding into its framework:

… from atheist scientists who, while insisting on their own skeptical
hardheadedness, were equally adamant that there was something feckless and foolhardy, even indecent, about criticizing religious belief. There were several moments during our panel discussions that brought to mind the final scene of Invasion of the Body Snatchers: people who looked like scientists, had published as scientists, and would soon be returning to their labs, nevertheless gave voice to the alien hiss of religious obscurantism at the slightest prodding. I had previously imagined that the front lines in our culture wars were to be found at the entrance to a megachurch. I now realized that we have considerable work to do in a nearer trench. (24, emphasis mine)

… have managed to convince some scientists and science journalists that it is wise to split the difference between intellectual integrity and the fantasies of a prior age. (24, emphasis mine)

The fact that our moral intuitions probably conferred some adaptive advantage upon our ancestors does not mean that the present purpose of morality is successful reproduction, or that “our belief in morality” is just a useful delusion. (Is the purpose of astronomy successful reproduction? What about the practice of contraception? Is that all about reproduction, too?) (48, emphasis mine)

*TML’s* treatment of moral psychologist Jonathan Haidt – a scientist Harris alleges to respect – exemplifies the fallback position of sarcastic address:

And what if certain cultures are found to harbor moral codes that look terrible no matter how we jigger Haidt’s five variables of harm, fairness, group loyalty, respect for authority, and spiritual purity? What if we find a group of people who aren’t especially sensitive to harm and fairness, or cognizant of the sacred, or morally astute in any other way? Would Haidt’s conception of morality then allow us to stop these benighted people from abusing their children? Or would that be unscientific? (91, emphasis mine)

Haidt asks us to ponder mysteries of the following sort:

[I]f morality is about how we treat each other, then why did so many ancient texts devote so much space to rules about menstruation, who can eat what, and who can have sex with whom?
Interesting question. Are these the same ancient texts that view slavery as morally unproblematic? Perhaps slavery has no moral implications after all—otherwise, surely these ancient texts would have something of substance to say against it. **Could abolition have been the ultimate instance of liberal bias?** Or, following Haidt’s logic, why not ask, “if physics is just a system of laws that explains the structure of the universe in terms of mass and energy, why do so many ancient texts devote so much space to immaterial influences and miraculous acts of God?” **Why indeed.** (87, emphasis mine)

This negative literary aspect of sarcasm and irony reaches its apex, though, when the text addresses a scientist Harris definitively does not respect. A substantial portion of *TML’s* chapter four, the purported chapter on morality and religion, engages in a vendetta-esque takedown of NIH-director Francis Collins that is so detailed as to seem personal. I will conclude this section with some examples of *TML’s* most acerbic text. As an attack on an individual scientist, this does not represent science communication in a strict sense, but its overall effect in the course of the book is a trumpeted reminder that opposing views will not be tolerated. Again, this disposition is not recommended for broader science communication—far from it.

To read [Collins’s book *The Language of God*] is to witness **nothing less than an intellectual suicide.** It is, however, a suicide that has gone almost entirely unacknowledged: The body yielded to the rope; the neck snapped; the breath subsided; and the corpse dangles in ghastly discomposure even now—and yet polite people everywhere continue to celebrate the great man’s health. (160, emphasis mine)

Collins is regularly praised by his fellow scientists for what he is not: he is not a “young earth creationist,” nor is he a proponent of “intelligent design.” Given the state of the evidence for evolution, these are both very good things for a scientist not to be. But as director of the NIH, Collins now has more responsibility for biomedical and health-related research than any person on earth, controlling an annual budget of more than $30 billion. He is also one of the foremost representatives of science in the
United States. **We need not congratulate him for believing in evolution.** (161, emphasis mine)

This is self-deception at full gallop … And if we thought Collins’s reasoning could grow no more labile, he has since divulged that the waterfall was frozen into three streams, which put him in mind of the Holy Trinity. It should go without saying that if a frozen waterfall can confirm the specific tenets of Christianity, anything can confirm anything. (163)

One hopes to see, but does not find, the phrase “Dear Diary” framing these solemn excursions from honest reasoning. (165)

One wonders if the author has ever read a newspaper. (170)

Collins’s case for the supernatural origin of morality rests on the further assertion that there can be no evolutionary explanation for genuine altruism. Because self-sacrifice cannot increase the likelihood that an individual creature will survive and reproduce, truly self-sacrificing behavior stands as a primordial rejoinder to any biological account of morality. In Collins’s view, therefore, the mere existence of altruism offers compelling evidence of a personal God. A moment’s thought reveals, however, that if we were to accept this neutered biology, almost everything about us would be bathed in the warm glow of religious mystery. Smoking cigarettes isn’t a healthy habit and is unlikely to offer an adaptive advantage—and there were no cigarettes in the Paleolithic—but this habit is very widespread and compelling. **Is God, by any chance, a tobacco farmer?** Collins can’t seem to see that human morality and selfless love may arise from more basic biological and psychological traits, which were themselves products of evolution. It is hard to interpret this oversight in light of his scientific training. **If one didn’t know better, one might be tempted to conclude that religious dogmatism presents an obstacle to scientific reasoning.** (170, emphasis mine)

**Conclusion**

In this chapter, I have delimited seven aspects of the text of *TML* that mediate its function as a popular science communication text. The first three – dichotomization and juxtaposition of topics, analogy / metaphor, and hierarchical / reductive explanation

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72 Again, it is the explanation that is positive in its hierarchical / reductive characteristics, not the science *per se.*
are categorized as positive, imitable aspects. The following four – dichotomization of audience, absence of epistemological framework, rhetorical questions / other assumptions of shared audience values, and aggressive / ironic tone – are categorized as negative aspects to be taken under consideration and differentiated from. All of these aspects are detailed in the text, and the chapter largely serves as a catalog of examples of positive and negative aspects of science communication.

The normative lessons of *TML* are in one sense straightforward: it cannot be used in whole, but it can be salvaged for its positive aspects. I have argued that *TML*’s scope of science and functional audience are so restricted as to render it inappropriate as an act of popular science communication intended for a broad popular audience. These factors, in combination with the overwhelming presence of the negative rhetorical aspects noted, make *The Moral Landscape* on the whole a terrible model for popular science communication. This is quite unfortunate, as I had initially hoped *TML*, with its reputation for clarity, could be utilized as a model to help address long-standing problems of science/-tific literacy in the U.S. and the extant poor science communication that fails to address that problem. But given the extent to which the negative textual elements of *TML* actively prohibit engagement with sufficiently broad audiences, this hope is largely squashed.

It is not totally squashed, of course, since broader science communicators can salvage *TML* for its positive aspects. Indeed, an increased emphasis on these aspects, particularly on the use of juxtaposition and allusion / metaphor, could be helpful in the broader
science communication project. I do not pretend this study or TML is the only source for imitable examples, but the specific taxonomy of aspects outlined here should allow for using other examples of successful popular science books to supply exemplary, imitable material.

Broader science communicators can also take the negative lessons of TML to heart. Again, my emphasis is that they should obviously be avoided, and the cataloguing here provides numerous examples of the language and assumptions to avoid. But the added norm is to keep constantly in mind the fact of this style of communication in the proverbial science communication marketplace. These aspects in Harris’s texts, as well as their employment in similar brands of not-really-all-that-popular science communication, serve to insulate science from the broader public. These texts assume a smaller, inherently interested audience that can be relied upon to have already bought into the primacy of science as a (THE) knowledge producing enterprise and choir-preach to it accordingly. Participants in the broader science communication project cannot afford these restrictions of audience. It is inept on the part of a public communicator to assume that a broad audience will have already bought into the supremacy of science; it is inept to think that readers even should be ceding primacy to science without a critical eye. Broader science communicators should take pains to counteract these assumptions. This means actively disassociating from and countering these negative aspects: not just avoiding exclusionary characterizations of audience but using inclusionary characterizations, and not just explaining epistemological frameworks for nascent science
but explaining why these frameworks and the nascent science matter and ought to be foundational to an understanding of the world.

In another sense, though, the normative lessons are less straightforward. For one, the positive aspects are beneficially imitable insofar as they are able to be executed without overextension. I have noted this in the section on caveats above: positive contributions of clarity achieved via dichotomization are accompanied by chances of false dichotomization; metaphors can be over-extended and analogies can be imprecise; and hierarchical arrangement / reduction can oversimplify and obscure complex matters like emergent properties, etc. Suffice it here to note that TML’s presentation of science and its ability to describe it using dichotomies, reductions, etc., may to some degree be tied to the dichotomous and reductive nature of the science itself. It is important not to bastardize science in the course of explaining it; therefore, in order to preserve the integrity and complexity of the science to be explained, broader project communicators must be transparent about oversimplification in service of clarity as being distinct from simplicity of the science itself. This is not easy, so this puts a large burden on communicators to imitate TML “correctly” – not to copy it, but to honestly apply the positive aspects without distorting the science to be understood in the process.

Another normative lesson stems from considerations that recall the very basis of the broader science communication project. The literature broadly describes science communication as “not done well” (Treise & Weigold, 2002), and one claim that motivated this project was that there is one understudied avenue in which science
communication is done well, that of popular science books. If TML is typical, though, of science communication done well, it may be the case that clarity of science communication depends entirely upon the sorts of already interested and already conversant / knowledgeable audiences that Harris assumes he has. I.e., science communication may face an impossible hurdle in addressing broad audiences that lack a certain minimal interest, knowledge base and investment.

This does not bode well for the broader science communication project, but it may provide a final helpful insight in that it steers those with concerns about popular science/scientific literacy in a different direction. Perhaps popular literature is just not the venue in which to address this problem. If the problem here is that clear science communication requires interested-invested-knowledgeable audiences, an alternative to altering communicative methodology is to alter the audience. This is highly speculative on my part at this point, but the idea is that generating this interest, investment and knowledge via other avenues – perhaps via improving childhood education programs aimed at “getting them while they’re young”\textsuperscript{73} – could facilitate this communication for future science communication audiences.

This is not to offer an overly simple solution – “educate the children!” – but rather to conclude with a thought that could inspire future study. A pessimistic interpretation of this textual study of TML is that clear science communication that overcomes an

\textsuperscript{73} Anecdotally, this is the sort of project popular science communicators like Bill Nye and Neil deGrasse Tyson implied at the Arizona State University Origins Project symposium on the science communication in February 2013. Their presentations emphasized personal narratives of having a \textit{je ne sais quoi} spark of interest in science generated in their youth and their own efforts to generate such sparks in a wider audience of children today.
insufficiently interested and knowledgeable adult audience is simply not a realistic possibility. It is at least possible that science communication projects like TML are not engaged in broad audience communication because their authors correctly assess that broad science communication with “unscientific” adults is fruitless. That casts a dark shadow on the broader science communication project indeed.

But it also indicates a more complicated topography of the, ahem, communicative landscape. This is a notion and a direction of study I will discuss in this dissertation’s conclusion: TML is not intended for science experts, but it is also not intended for a general audience. This refutation of the simple division of science communication into “for-experts” and “for-non-experts” categories reveals a poverty of the operative taxonomy of publics and of science communication.
Chapter Summary

In this chapter, I briefly discuss the inherent difficulty of communicating a neuroscientific account of ethics to a popular audience. I draw on a subsection of *The Moral Landscape*\(^{74}\) that gives a neuroscientific account of free will and moral culpability to demonstrate some factors that especially problematize neuroscientific ethics for science communication. I argue that popular audiences often hold dualistic conceptions of the mind-brain relationship; therefore, attempts to communicate a monistic, materialist conception of the mind-brain relationship must overcome a serious obstacle. In *TML*, Harris largely fails in the face of this obstacle because in order to explain the illusory nature of free will, he invokes a dualistic account of the relationship between conscious, subjective experience and the rest of cognitive functioning. This dualistic account is confusing at best, and this confusion stems largely from the failure of neuroscience to explain the “hard-problem” of how conscious experience can arise from particular arrangements of physical matter. Without an adequate explanation of this phenomenon, it is difficult to envision how efforts at popular science communication will be able to explain to readers how their brains are “really” the ones making their decisions and to convince them to deny the reality of their immediate phenomenological experience.

\(^{74}\) The block-quoted selections in this chapter are all taken from (Harris, 2010) and the page numbers refer to the pages in the hardcover first edition.
Introduction

As described in Chapters 2 and 3, some of the most palpable barriers to effective science communication in *The Moral Landscape* arise when literary aspects are utilized that make reference to the book’s actual or potential audience. In Chapter 3, I identify four negative aspects – Audience Dichotomization, Absent Epistemological Frameworks, Rhetorical Questions / Assumptions of Shared Values, and Overt Aggression / Irony – all of which draw attention away from the science to be explained and make reference, directly or indirectly, to actual or potential audiences for the text. Many of these references serve to make specific comment on particular kinds of audiences and thereby alienate those audiences. For well-discussed reasons, alienating segments of the potential popular audience undermines the efforts of the broader science communication project, and these literary aspects are therefore strongly discouraged.

My recommendation is premised on the idea that science communicators can tailor their efforts to avoid alienating broad public audiences. But what if the science itself alienates those audiences? Neuroscience and psychology make extensive claims regarding the subjective experience of humans, thereby making direct reference to all potential and actual audiences. Many sciences cover humans and human nature, of course. Evolutionary biology discusses our collective origins, biochemistry discusses the metabolic pathways we use to utilize glucose as an energy source, etc. But neuroscience and psychology purport to comment on the reality of the most intimate workings of our minds, the very medium of our interaction with the world and with one another. They are
the sciences of our minds and brains and therefore largely the science of our selves, of us. They are the scientific authority on human experience, if we are to take Harris’s claims about their primacy seriously (see Chapter 2).

As Harris points out numerous times in *TML*, psychology and neuroscience also tend to point out just how ill-informed and typically mistaken our commonsense, everyday, pop-psych impressions are regarding the true natures of our minds, brains and selves. In most counts of description of daily experience, people are just wrong. This stems in part from the conflict between neuroscientific accounts of the causes of our behaviors and our lack of direct experience of those causes. Introducing his discussion of free will, Harris notes:

> We are conscious of only a tiny fraction of the information that our brains process in each moment. While we continually notice changes in our experience—in thought, mood, perception, behavior, etc.—we are utterly unaware of the neural events that produce these changes. In fact, by merely glancing at your face or listening to your tone of voice, others are often more aware of your internal states and motivations than you are. And yet most of us still feel that we are the authors of our own thoughts and actions.

> All of our behavior can be traced to biological events about which we have no conscious knowledge: this has always suggested that free will is an illusion (103)

The phrase “can be traced to” implies “can be reduced to,” this is in line with much of the presentation of science in *TML* (see Chapter 2 and 3) and indicates the typical orientation of the book that higher level phenomena be explained entirely in terms of lower level phenomena. In essence, human behaviors, and everything about human experiences of them, are really biological events that by nature follow laws of cause and effect beyond the control of subjective agents. “We” literally have no choice in the matter. It is not
entirely clear, in this view, what “we” even means. Whatever it means, the fact of a subjective agent that makes choices, executes behaviors and could have done otherwise is fundamentally illusory; people think they are making choices, but these choices are being made at physical levels much lower than that of which they are aware.

Needless to say, this flies in the face of reported human experience. It amounts to a claim that we humans – and all of Harris’s readers – are in fundamental error as to the nature of our experience. Our accounts do not describe what is really happening. Our experiences are not, in fact, what they are, but rather something else. This is no small claim. It is, from the perspective of someone taking his or her experience of the world to be a rather straightforward representation of that which actually is, a quite radical and difficult claim to accept.

The difficulty of such a claim is to some degree embedded in the attempt to collapse the long-standing dualistic split of mind and brain into the monistic, materialist interpretation of neuroscience that the mind is caused by (or possibly even equivalent to parts of) the brain. Despite however much it may feel that mental experience is separate from the physical world, the underlying theory of neuroscience maintains that the mind cannot be separated from its physical underpinnings; as Harris later puts it, “The assumption that the mind is the product of the brain is integral to almost everything neuroscientists do” (180).
Part of the difficulty, then, is that while neuroscience makes this assumption, it does not explain how the brain produces mind and how conscious experience can arise from physical matter. I.e., it does not address the “hard problem of consciousness” (Chalmers, 1995). Embedded in the claim that any conscious experience is to some degree illusory is a fair bit of hand-waving at how this illusion comes to be. When pushed to the point of choosing between continuing to believe one’s own immediate firsthand experience and an incomplete account of why that experience is false, the jump to discount one’s long-standing mode of interaction with the world can be too large to make.

Independent of the exact reasons, the communication of this sort of neuroscientific ethics fundamentally represents an assertion that generally speaking, humans are incorrect with regard to the true nature of their interactions with the world. This is an entirely different sort of implicit assumption of scientific naïveté on the part of the reader. I can be ignorant, misinformed and wrong about all kinds of science; I can mistake which non-human primates are closest to humans in the phylogenetic tree, or I can misunderstand how enzymes function as chemical catalysts. These would be misconceptions I would have regarding facts of the world, and science communication efforts could correct these misconceptions without inherent comment on the entirety of my thinking. But with this textual neuroscientific account, the claim is that the reader is fundamentally wrong about the whole of his/her experience. This is not a misconception about a fact of the world. It’s a misconception of the world: whatever one thinks one has been doing, that is not it. The extent of this corrective that the text alleges to make for its audience members cannot be
overstated. Gracefully making this corrective in a manner acceptable to broad popular audiences is incredibly difficult.

In the remainder of this chapter, I will exemplify the manifestation of this difficulty by using the conclusion of *TML*’s chapter 2 (“Good and Evil”) as a case study within the larger scope of this dissertation. In this section, Harris delineates an argument about people’s generally false impressions regarding free will and its implications for moral culpability. In the course of his explanation, the relationship of the mind to the brain (and specifically the relationship of the brain to subjective experience) becomes increasingly muddled as he attempts to navigate the minefield of explaining to readers that their experience of the world is fundamentally different from what they take it to be. I argue that in order to explain a monistic, materialist interpretation of free will to an audience that he takes to hold dualistic assumptions about the relationship of mind and brain, Harris invokes another dualistic relationship between the brain-mind and subjective conscious experience. This terminology occludes the monistic explanation he is attempting to deliver. It also clouds one of the vital concepts a materialist, monistic neuroscientific explanation of free-will would need to explain: how any conscious experience can arise from the brain, including the however-mistaken sensation of free will but also the more basic experience of being a conscious subject.

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75 A somewhat expanded form of Harris’’s argument regarding free will and moral responsibility appears in 2012’s short book / essay *Free Will*. This essay, however, cribs extensively from passages of *TML* (copying them verbatim) and does not add evidence nor expand on the central claims already present in *TML*’s argument (it primarily responds to some criticisms of *TML* that do not bear on the content presented here). In the interest of confining the scope of this dissertation, I will restrict commentary to the argument contained in *TML*, but I do want to acknowledge Harris’s other work on the topic.
The structure of this study is as follows: I begin with a brief account of Harris’s views on free will and moral culpability as relayed in *TML*. In the course of this account, I provide some critical commentary indicating what I take to be some of the source conceptual problems in his account that give rise to the communicative problems. I note textual evidence of the communicative confusion that arises when Harris invokes the subjective experience as separate from the mechanics of the brain-mind and thereby implies a dualistic relationship between subjective experience and causal forces in the brain. I conclude by noting that whether they are correct or not, neuroscientific explanations of ethics (or conscious experience generally) that prompt readers to deny the immediacy of their subjective experience with no explanatory framework to explain that experience face a Herculean task. The dissonance between neuroscientific explanations and commonsense, folk-psychological descriptions of human experience should not be taken to indicate problems with the neuroscientific position, but they should be anticipated as even-larger-than-normal barriers to popular science communication.

**Free Will and Moral Responsibility in The Moral Landscape**

Harris argues against the existence of free will by crafting a dichotomy of physical causation underlying our choices: either our actions are the consequences of mechanical operations in the brain that can be used to predict our choices well before we are conscious of them, or our actions are the consequence of random patterns of micro-level brain activity (ion channel openings, synaptic vesicle release, etc.). Harris takes the latter to be completely implausible and non-indicative of free will:
If I were to learn that my decision to have a third cup of coffee this morning was due to a random release of neurotransmitters, how could the indeterminacy of the initiating event count as the free exercise of my will? Such indeterminacy, if it were generally effective throughout the brain, would obliterate any semblance of human agency. Imagine what your life would be like if all your actions, intentions, beliefs, and desires were “self-generated” in this way: you would scarcely seem to have a mind at all. You would live as one blown about by an internal wind. Actions, intentions, beliefs, and desires are the sorts of things that can exist only in a system that is significantly constrained by patterns of behavior and the laws of stimulus-response … “self-generated” mental events would amount to utter madness. (104)

Therefore, the former – that our actions are determined by brain activity that we are not privy to and that occurs prior to the conscious experience of having made a decision – describes the true physical causation of our actions. And because this causation happens prior to conscious choice, free will does not exist:

All of our behavior can be traced to biological events about which we have no conscious knowledge: this has always suggested that free will is an illusion. For instance, thephysiologist Benjamin Libet famously demonstrated that activity in the brain’s motor regions can be detected some 350 milliseconds before a person feels that he has decided to move. Another lab recently used fMRI data to show that some “conscious” decisions can be predicted up to 10 seconds before they enter awareness (long before the preparatory motor activity detected by Libet). Clearly, findings of this kind are difficult to reconcile with the sense that one is the conscious source of one’s actions. (103, emphasis mine)

The emboldened section of this quotation represents the claim that free will does not exist because of neuroscientific evidence that what are typically thought to be conscious

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76 I must qualify that Harris overstates things a bit here. Strictly speaking, it is hard to reconcile this kind of evidence with the sense that I am 100% the conscious source of my actions. The fact that pre-conscious neural activity can make better than chance predictions about the outcomes of conscious decisions just means that they are likely having some impact on those decisions, not that nothing else is. A parallel example: from the statistical analysis of baseball, batter-handedness is a variable that can make better than chance predictions about the success of a player (e.g., left-handed
decisions have associated underlying brain activity prior to conscious awareness of the
decision being made. It is worth pausing to ask two questions. One, what is the actual
meaning of “can be predicted” being employed here? This phrasing is often used in
accounts of scientific experimentation to mean something like “use some prior event to
foretell an outcome with greater likelihood than would be expected were the relationship
between the prior event and the outcome random.” There is a danger of confusing this
technical definition with the everyday notion of prediction as foretelling the future. That
everyday notion implies great (if not 100%) accuracy in such foretelling, and this is
clearly not what occurred in the experiment cited. In the experiment, the prediction at 10
seconds prior to conscious decision alluded to by Harris were in the range of 55 to 60%
predictive (depending on the region of the fMRI scan used) against a baseline of chance
prediction at 50% (Soon et al., 2008). This is impressive, of course, but it is not the sort
of evidence of hard determinism that Harris pretends it is, either with the use of language
here or in the remainder of this section on free will. It seems that in order to strengthen
his case for a lack of free will, Harris is writing as though we have better explanations for
the relationship between neural activity prior to conscious awareness and choices than we
actually do at this point. If the brain really is “deciding for us” at 10 seconds prior to our
conscious experience of the decision, it seems as though a lot of intervening neural
activity in that 10 seconds is still needed to account for that 40% of the time in which the
brain changes its mind (so to speak).

batters typically fare better when facing right-handed pitchers). This fact does not keep batter skill from also
contributing to the player’s success. It would be somewhat ludicrous to argue that a study that demonstrates the
predictive capacity of batter-handedness is hard to reconcile with the sense that some players are more skillful than
others.
The second question worth asking stems from this lack of “hard” determinism. If the illusory nature of free will is supported by any choice-correlated fMRI signal that occurs prior to the conscious experience of decision-making, what is actually required of neuroscientific evidence for free will? Must every pre-conscious pattern of fMRI activation have no correlation whatsoever to conscious decisions? Must pre-conscious brain processes be entirely unrelated to conscious processes? This seems like an awfully high bar to clear to demonstrate that conscious experience makes some contribution to decision making, especially when it certainly subjectively seems as though we exert some control over our behavior via conscious effort. As Harris admits, neuroscience is entirely premised on the notion that mind is caused by brain; no one is pretending that the contribution of free will and consciousness to decision-making happens with absolutely no pre-conscious input. Before arguing that evidence of pre-conscious contributions to conscious decision-making counts as evidence against free will, one must give some idea of what free will would look like and what kind of fMRI evidence would support it within the assumed framework of neuroscience. Otherwise free will seems precluded by the very monistic, materialist framework within which Harris is operating, in which case the notion that free will does not exist is question-begging at its finest.

My point, of course, is not that Harris is wrong. It is that within his opening paragraphs, he is failing to draw the necessary distinctions to discuss the complicated reconciliation of scientific materialism with our felt sense of free will. In order to make a case for the illusion of free will, he is exaggerating claims of hard determinism and neglecting to

77 With the possible exception of hard-line dualists arguing for a complete separation of brain and mind. Of course, they would be advocating for something like a soul, which Harris obviously would not accept.
clarify what neurological evidence for free will would even look like. In part, he is omitting how his materialist approach to the relationship of mind and brain entail these conclusions regarding the commonsense notion of free will. But he is also failing to communicate a detailed sense of what this commonsense notion of free will actually is.

The key missing element is that this version of free will refers to the notion that we are the absolutely unrestricted author of our actions, that our conscious decision making process is all that influences our decisions. “Free” will, it seems, means “absolutely free” will. He may successfully argue against “absolutely free will,” but he never explicitly indicates this is what he has in mind. These omissions further blur the communication of an already difficult topic.

The continuation of the above quotation contains Harris’s initial attempts to delimit the relationship amongst mind, brain and self:

Notice that distinction between “higher” and “lower” systems in the brain gets us nowhere: for I no more initiate events in executive regions of my prefrontal cortex than I cause the creaturely outbursts of my limbic system. The truth seems inescapable: I, as the subject of my experience, cannot know what I will next think or do until a thought or intention arises; and thoughts and intentions are caused by physical events and mental stirrings of which I am not aware.

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78 The closest he comes is in stating, “you are not the author of your thoughts and actions in the way that people generally suppose” (106). This is noteworthy in that it both does not specify what that way is and leaves a door open to our being the author of our thoughts and actions in some non-generally-supposed way. Harris does not clarify this; again, my point in mentioning this is that these ambiguities seem inherent to discussing consciousness and free will and interfere with clear scientific explanation.

79 As noted, this is not coincidentally an argument against the possibility of the free-from-physical-constraints soul prominent in what Harris identifies as religious metaphysics.

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The latter emboldened text is the clearest Harris gets with regard to his use of pronouns in this section of *TML*. “I” is equated with “the subject of my experience” (in opposition to something like “the author of my experience”\(^80\)). This identification indicates that when Harris refers to a person who is mistaken as to his/her role in his/her decision-making, he is referring only to the component of that person’s consciousness that experiences. It is an ambiguous use of the term “subject” since it seems to simultaneously mean something like “first-person observer of experiential phenomena” as well as meaning the entity to which these phenomena happen, the one who is “subjected to” effects of the actions propagated by the remainder of the person. This latter definition might be better construed as “object” because Harris emphasizes this conscious component’s passive, helpless role in phenomenological experience; it is, after all, not the author of its actions, just their recipient. The construct resembles an observing entity trapped in a mind-brain while that mind-brain actually makes and executes all decisions. And of course, all the while this entity, the self, is mistaken about its role. It turns out that “I” am **solely** that which things “happen to,” even the things that I have every reason to subjectively believe I am causing to happen.

The former emboldened quotes are interesting because they also contribute to this splitting of mind-brain and self. If “I” am not “initiating events in executive regions of my prefrontal cortex” or “causing creaturely outbursts of my limbic system,” then who or what is? In Chapter 3, I noted that Harris normally tends to equate brains with the people

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\(^80\) E.g., “But from a deeper perspective (speaking both subjectively and objectively), thoughts simply arise (what else could they do?) unauthored and yet author to our actions.” (105). I take this to imply that authorship is not something we can ascribe to us.
who have them, using anthropomorphic statements like “what must a brain do to accept a proposition as true?” as a stand-in for “What must we do to believe such statements?” (14). Here Harris is explicitly distinguishing the self from the brain by characterizing the brain processes as things that we do not initiate but that happen to us.

Lest we think this is a classic mind-brain split, Harris notes that our self is not our mind, either:

> The problem is that no account of causality leaves room for free will. Thoughts, moods, and desires of every sort simply spring into view—and move us, or fail to move us, for reasons that are, from a subjective point of view, perfectly inscrutable … Am I free to change my mind? Of course not. It can only change me. (104)

Again the problem with referents for pronouns comes up. Harris does not specify what view into which these things spring up, what aspect of us is moved or fails to be moved (does this again refer to subjects of experience? Or an acting us this time that nonetheless does not make its own decisions?), or whose subjective view takes these thoughts, moods and desires to have inscrutable reasons. More importantly, Harris definitively disassociates I and mind by noting that an “I” cannot change its mind, but a mind can change its “I.” There’s no indication that Harris takes this to be a reflective action (i.e., the mind is not changing itself\(^8\), so this language seems to declare the mind and “I” distinct entities. And, again, neuroscience assumes the mind to be caused by the brain, so this entails that the both entities – the mind-brain conglomerate – are somehow distinct from this subjectively experiencing “I.”

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\(^8\) Which is more in line with what I take the normal idiom “I change my mind” to be, an instance of an “I” changing an aspect of itself (its intentions).
Harris takes these distinctions and the hard determinism he claims to be at play in the relationship between neural causes and action to have serious implications for how we talk about the past:

It means nothing to say that a person would have done otherwise had he chosen to do otherwise, because a person’s “choices” merely appear in his mental stream as though sprung from the void. (104, emphasis mine)

This is another manifestation of Harris’s claim that conscious decision-making plays no role in decision-making since choices are things that happen (or as described here, “appear”) to the subjective stream of consciousness. Note the fluctuating distinctions made by terminology here. “Person” first refers to the entire mind-body-self collective entity that acts (because it is supposedly an entity that “did” something), but then “person’s” specifically refers to the self, the subjective experiencer, since it is the entity that mistakenly takes itself to be making choices. “He” initially refers to the mistaken chooser, the subjective experiencer, but then “his” must refer to the entire mind-brain-self entity since the mental conscious stream – the subjective experiencer – is identified as belonging to it, not being it. Harris’s splitting of persons causes immediate issues of clarity. An additional issue is that he does not consistently apply this theory of past counterfactuals with regard to his own actions! He later argues, “If I had not decided to write this book, it wouldn’t have written itself” (105). Per Harris’s claims, though, it “means nothing” to speculate about what would have happened had he decided to do otherwise.
In this sense, each of us is like a phenomenological glockenspiel played by an unseen hand. From the perspective of your conscious mind, you are no more responsible for the next thing you think (and therefore do) than you are for the fact that you were born into this world.

Our belief in free will arises from our moment-to-moment ignorance of specific prior causes. The phrase “free will” describes what it feels like to be identified with the content of each thought as it arises in consciousness. (104)

Again, Harris identifies “us” with the subjectively experiencing component of consciousness, the “phenomenological glockenspiel.” This appears to be the entity that would bear responsibility were it actually choosing to think or do things. The concept is inconsistent, though, as Harris next employs the phrase “from the perspective of your conscious mind” such that the conscious mind is an entity belonging to you (and not comprising you, as he just indicated). “You” jumps in meaning from the subjective experience to the owner of that experience to the entirety of the person born into the world, all in the course of a sentence.

He concludes this section with a re-imagining of the true nature of “free will” as the feeling of (presumably false) identification with one’s thoughts (since these thoughts are not generated by the consciously experiencing self, per Harris). There are two interesting

82 Other than the German association between the word glockenspiel and phenomenology’s Husserlian origins, I am unsure why Harris picked that particular instrument (I am sure he, too, would confess to this mystery, as “he” does not choose anything). I find the metaphor confusing. Any musical instrument is used to make music, and I do not think Harris means that the unseen hand is using “me” to produce phenomenological experience, since I am still the entity that experiences it. I suppose the metaphor is imprecise but still functional as the main point is the passivity of the instrument; nevertheless, I have always thought of myself as more of a phenomenological theremin.
notions at play here. The first is the implicit claim of the false nature of this feeling. Harris bases this falsehood on our ignorance of prior causes. It is possible, though, to construe the feeling as correct in that a more coherent notion of self would encompass those prior causes as part of me\textsuperscript{83}. This would mean that while the idea that the experiencing self is magically conjuring thought and actions from nothing is surely false, the identification with these thoughts is not; it is correct identification accompanied by an incorrect understanding of the nature of that identification.

The second interesting notion is that the passage invokes qualia, the “what it feels like” to think one has free will. This prompts the question of “feels like to whom?” and how Harris knows what free will feels like to anyone other than himself. Harris is once again relying on an intuition or assumption about shared feelings with his audience as he identifies self with the conscious experiencer that feels.

In the following section, Harris correctly notes that his claims about free will and identification of the self have important implications for moral responsibility:

The question of free will is no curio for philosophy seminars … Any scientific developments that threatened our notion of free will would seem to put the ethics of punishing people for their bad behavior in question.

But, of course, human goodness and human evil are the product of natural events. The great worry is that any honest discussion of the underlying causes of human behavior seems to erode the notion of moral responsibility. If we view people as neuronal weather patterns, how can

\textsuperscript{83} This is well beyond the scope of this text, but I am essentially stating that if one thinks of the self as being comprised of both the conscious experiencing component and these physical prior causes (if “I” contains multitudes, as it were) then the identification is correct – those thoughts really are coming from me – even if they are not coming from the conscious component \textit{ex nihilo} in the way it “seems” to the conscious component.
we coherently speak about morality? And if we remain committed to seeing people as people, some who can be reasoned with and some who cannot, it seems that we must find some notion of personal responsibility that fits the facts. (106)

This first point is especially salient, as Harris’s identification of “them” (people) as the trapped subjective experiencers would seem to imply that any bad behavior is not really “theirs” besides. And while it would help to define human evil in some sense, the following point is compelling, too. If people are “neuronal weather patterns” and we accept Harris’s argument that people – again, the experiential selves – are not making choices, then responsibility for those choices would seem to be precluded entirely. Unfortunately, definitions of people, or “us,” get crossed again, as the phrase “remain committed to seeing people as people” is opaque. It would seem that Harris wants to treat people as the experiencing selves he has taken pains to define them as but also “remain committed” to traditional views he has supposedly overturned.

Harris’s attempt to retain concepts of personal responsibility in light of his identification of the “personal” self with solely the person’s consciously experiencing component reveal the dissonance caused by his dualistic split between the experiential self and the mind-brain that is “really” responsible. After repeatedly identifying thoughts, beliefs and actions as unauthored by the person him/herself, he nonetheless grounds personal responsibility in these unauthored concepts:

To say that I was responsible for my behavior is simply to say that what I did was sufficiently in keeping with my thoughts, intentions, beliefs, and desires to be considered an extension of them. … [if I behaved erratically], this behavior would be totally out of character; I would feel
that I was not in my right mind, or that I was otherwise not responsible for my actions. Judgments of responsibility, therefore, **depend upon the overall complexion of one’s mind**, not on the metaphysics of mental cause and effect. (106-7, emphasis mine)

So even though Harris has reconstrued our concept of free will and self as being illusory and located entirely in the passively experiencing conscious experiencer, respectively, he nonetheless identifies personal responsibility as rooted in aspects of us – thoughts, intentions, beliefs and desires – over which he has just alleged “we” have no control. This is a long-range view, as it depends on an assessment of long-term character (not just the immediate configuration of these various unauthored factors), making moral responsibility for a given action inherently relative to what a person “typically would have done.” This is a strange sentiment given that “would have done” is a meaningless notion according to Harris’s earlier claims. Personal responsibility is also rooted in the overall complexion of mind, even though Harris earlier explicitly distinguishes the person from his/her mind.

Harris attempts to resolve these apparent conflicts by further re-orienting how we conceive of responsibility:

> It seems to me that we need not have any illusions about a causal agent living within the human mind to condemn **such a mind as unethical, negligent, or even evil, and therefore liable to occasion further harm**. What we condemn in another person is the intention to do harm—and thus any condition or circumstance (e.g., accident, mental illness, youth) that makes it unlikely that a person could harbor such an intention would mitigate guilt, without any recourse to notions of free will. Likewise, degrees of guilt could be judged, as they are now, by reference to the facts of the case: the personality of the accused, his prior offenses, his patterns of association with others, his use of intoxicants, his confessed intentions
with regard to the victim, etc. If a person’s actions seem to have been entirely out of character, this will influence our sense of the risk he now poses to others. If the accused appears unrepentant and anxious to kill again, we need entertain no notions of free will to consider him a danger to society. (108, emphasis mine)

Personal responsibility for actions is redefined in terms of the likelihood that the person would repeat those (or other similarly pernicious) actions. Here, Harris has radically redefined responsibility and reduced the function of punishment to its capacity to prevent future bad outcomes. Responsibility has nothing to do with the relationship between the conscious experiencing self and the action itself, because responsibility is redirected to concern future action. It doesn’t really concern the relationship between this self and future actions either, as again, these would likewise be out of that self’s control, based on everything Harris has argued to this point.

Personal responsibility, then, is not about persons or selves, just about the assumed propensities of a particular “self”-imprisoning human machine. A full critique of this view is beyond the purview of this project, but I am compelled to mention that at the very least this implies that people are strictly responsible for actions they are likely to take instead of ones they have taken. This view would justify punishing persons in anticipation of future danger they are likely to pose, whether they have actually acted badly or not. This position is transparently problematic with respect to justice, not to mention the dystopian Minority Report future it prompts one to imagine.
Harris next lapses back into the problems caused by his sense of self when he comments on the intersection of his concept of personal responsibility and retributive punishment. He claims that while his concept of personal responsibility is rooted in the holistic propensities of people (i.e., not just the role of their conscious experiencing self in decision-making), “they” are nonetheless not really responsible for “their” plight:

The men and women on death row have some combination of bad genes, bad parents, bad ideas, and bad luck—which of these quantities, exactly, were they responsible for? No human being stands as author to his own genes or his upbringing, and yet we have every reason to believe that these factors determine his character throughout life. (109)

The problem is that Harris has extensively argued that no human being – no consciously experiencing self, anyway – stands as author to his/her thoughts, character, actions, or propensities, either. The above personal responsibility seems to define the “person” of “personal” as the entirety of a human. But here, “person” goes back to the dualistic notion of the phenomenological glockenspiel, the “I” that counts as the recipient of retributive punishment. And that “I” is played by the unseen hand of genes, parents, ideas, and luck, but also thoughts, character, actions, or propensities. The central concept of the self, the “I” that we should take ourselves to be and would hold responsible for anything, is vacillating, and the claims about personal responsibility get muddled in the shifting self’s wake.

Finally, Harris complicates his radical interpretation of free will with a casual addendum:

It is generally argued that our sense of free will presents a compelling mystery: on the one hand, it is impossible to make sense of it in causal
terms; on the other, there is a powerful subjective sense that we are the authors of our own actions. However, I think that this mystery is itself a symptom of our confusion. It is not that free will is simply an illusion: our experience is not merely delivering a distorted view of reality; rather, we are mistaken about the nature of our experience. We do not feel as free as we think we feel. Our sense of our own freedom results from our not paying attention to what it is actually like to be what we are. The moment we do pay attention, we begin to see that free will is nowhere to be found, and our subjectivity is perfectly compatible with this truth. Thoughts and intentions simply arise in the mind. What else could they do? The truth about us is stranger than many suppose: The illusion of free will is itself an illusion. (111-12)

Throughout TML, Harris relies on assumptions of shared values and experiences of audience and treats these shared concepts as obviously accessible via intuition, additionally assuming that intuitions and common sense universally match. I cover this extensively in Chapter 3 of this dissertation. Here, though, Harris ups the ante considerably. Not only are “we” generally in error about the reality of free will, the few of “us” who have noticed this error are in error about the nature of the error. “We are not as free as we think we feel” is Harris’s assertion, an assertion I can only take to mean that in addition to all the other mistakes I am making via my subjective experience, I am feeling it wrong. I am not paying attention, and if only I would, I would immediately see the proverbial light. Harris concludes by reinforcing his dualistic split between the brain-mind and self. Thought and intentions “simply arise” and my separate subjective self can do little more than witness them. And once my witnessing, experiencing self grasps this allegedly undeniable reality, this “I” will come to the inevitable conclusion that the

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84 Harris has already effectively argued that “we are not as free as we feel,” so the added sentiment of “as we think we feel” invokes the secondary error of being mistaken about how we are feeling. This is a bizarre accusation from my perspective; it seems equivalent to an accusation like “you think you are in pain, but if you only paid closer attention, you would realize you are not actually in pain.” This is what I am referring to when I say it is difficult to convince readers that they are somehow feeling incorrectly and that they should deny the immediacy of their subjective experience.
neuroscientific complication of free will is a non-issue. There is no problem here; rather, concerns about reconciling neuroscience with my phenomenological experience just reveal that I have always been mistakenly mistaken.

This is audacious, to say the least. Harris faces inherent barriers to communicating the neuroscientific ethics to a popular audience for the reasons described above. To pile on a recommendation that people consider the entirety of their subjective experience to have been in grave error and additionally in error about that error gratuitously complicates this process. By relying on a dualistic concept of self – the experiencing self that stands separate from the mind-brain that acts on it – Harris skirts the centrally confusing aspect of a neuroscientific account of ethics: How does a conscious experience arise from an arrangement of physical matter? This is a pressing difficulty, and cheating by (intentionally or not) importing an uncaused experiencing self obscures the controversial argument Harris is attempting to make.

**Harrisian Dualism and The Hard Problem**

Throughout this section, Harris struggles to reconcile the materialist, monistic neuroscientific concept of a person as product of mind-brain with the dualistic notion of the stream of consciousness standing as separate from the mind-brain. The latter is the very errant dualistic mindset he assumes people to generally adopt with regard to free will and responsibility. In an endnote from this section in which Harris argues against compatibilism (the idea that “free will is compatible with causal determinism” (217)
espoused by Daniel Dennett (2003)), Harris draws on Joshua Greene and Jonathan Cohen (2004) as he details his understanding of people’s intuitions about their experience of free will:

… the free will that people presume for themselves … is a freedom that slips the influence of impersonal, background causes … The neuroscientists Joshua Greene and Jonathan Cohen make the same point:

Most people’s view of the mind is implicitly dualist (J. Greene & Cohen, 2004, pp. 1779–1780). (217)

This is the variant of free will that Harris takes people to mistakenly think they possess. This variant is premised on a dualistic separation of mind and brain that Harris adamantly denies throughout TML. But this is the framework with which any audience that Harris addresses is supposedly intuitively and implicitly operating. Harris’s scientific claims here are claims about the audience itself. In an attempt to correct this errant framework, Harris is obliged to use the framework to address the audience, writing in terms of the mistakes “they” are making when “they” are unaware of what “they” are doing v. what “their brains” and “their minds” are doing. Worse, when he explains his neuroscientific theory of this refutation of free will and the necessary revision to moral responsibility, he maintains the dualistic split, continuing to write in terms of what the subjective experiencing consciousness perceives as entirely separate from what the brain and mind do.

This is a different kind of dualism: it is subjective-experiencer separated from mind-body as opposed to the typical mind separated from brain that Harris, Greene and Cohen allege
people to generally suppose. But it is dualism nonetheless. And dualism of any sort patently conflicts with the materialist, monistic underlying assumptions of neuroscience.

It could be that Harris’s penchant for resorting to assumed shared values and intuitions causes his neuroscientific explanation to be over-reliant on appeals to first-person experiences. He may just ironically have a predilection for discussing science in dualistic, subjective terms, since so much of his style consists of the sorts of quips ("it seems to me," “I cannot conceive of,” “Why did I use the term “inscrutable” in the previous sentence?”, etc.) that obliquely refer to his own conscious experience of writing and thinking. Excusing this possibility, though, there is another explanation for the difficulty of communication in this particularly tricky domain that would apply to all communicators of neuroscientific ethics: namely, that no one has ever explained the mechanism of how a physical entity like a brain can produce a phenomenological one like that of the subjective experiencer.

This is the aforementioned hard problem of consciousness, a problem that not only brooks no solution but one for which neuroscience allegedly lacks the tools to even investigate (Chalmers, 1995; Trefil, 1997). Part of the need to write in dualistic terms even when one is relaying a monistic account of neuroscientific ethics is rooted in the need to avoid addressing the hard problem with a popular audience (discussed below). These needs, unfortunately, interfere with clear communication of that monistic account.

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85 To Harris’s credit, this casual mode of first-person discourse likely endears him to supporters who find objective, third-person accounts typical of scientific reports to be off-putting.
The main reason to avoid a discussion of the hard problem of consciousness in popular explanations of neuroscientific ethics is that neuroscience has no deep explanation for the connection between physical matter and conscious experience, but several neuroscientific claims about conscious experience nonetheless take this connection as a given. A full discussion of the hard problem is obviously beyond the purview of this chapter, but a few aspects relating its connection to science communication bear mentioning here. As Chalmers notes, neuroscience is quite adept at addressing the connection between particular brain processes and functions of the mind, particular in the course of their disruption. Harris, too, notes this faculty of neuroscience and psychology and their dependence on crafting an objective account of subjective experience by connecting objective accounts of so-called brain-states (e.g., fMRI, Harris’s methodology of choice) to reports of subjective experience.

Popularly, this kind of neuroscientific explanation of brain function appears to be relatively uncontroversial. Understanding the subjective experience of depression, for example, as a consequence of the popular concept of “a chemical imbalance” appears to be taken as utterly straightforward, even though the exact mechanism of how (physical) chemicals generate a depressed subjective experience is far from understood. The reductive explanation, that depression is “really” a disease of neurotransmitters, is generally accepted.

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86 E.g., tumors in the medial pre-frontal cortex and their reliable disruption of executive functions like impulse inhibition discussed multiple times in *TML.*
There are salient differences between this sort of neuroscientific explanation and the one Harris makes regarding free will, though. Primarily, free will is not a function but the entire mode of subjective encounter with the world. This is not an explanation that gets at a particular aspect of human experience, it alleges to get at the whole of it. The relevant questions, then, are not how does this aspect of the brain affect this aspect of mental function, but how does the brain effect mind broadly speaking, a variant of the hard problem.

Also, the error identified in free will is not an exception to normal functioning. It is very much the subjective manifestation of typical brain function as it generates conscious experience. Harris would presumably agree (as he implies in a passage about a suicidal friend on pp. 181-2) that depression represents a malfunction of emotional regulation, a mood disorder and a disease. If free will were a parallel disease, it would be a disease everyone has. And therefore a claim about its erroneous nature is a claim about the inherent errors in the brain’s generation of the conscious experience; this also demands questions of how this experience is generated in order to understand how such a glaring error could be a feature (and not, say, a bug) of that generative process.

Lastly, explanations of depression attribute the subjective experience to be caused by the abnormal regulation of neurotransmitters. They do not generally claim that depression is really abnormal neurotransmitter regulation and that the subjective experience of depression is illusory. But this is precisely the form of Harris’s explanation of the experience of free will. Human choices are really physically determined outcomes of
brain processes, and the subjective experience of choosing is illusory. This denial of the illusory experience (and especially the second level denial that we are mistaken about our experience in the first place) invite questions about how and why these illusions are conjured into being by the brain if they have no bearing on our actions or their outcomes. Again, this is effectively a demand for an answer to the hard problem, an answer no neuroscientist is presently prepared to give.

All of these differences conspire to suggest that neuroscientific explanations of central concepts of conscious experience, especially those that would claim that experience to in any sense be illusory, are intrinsically questions about how the object of neuroscientific study, the brain, generates conscious experience. As these questions have no answers to date, it is difficult to conceive of any neuroscientific explanation of conscious experience that will be satisfactory enough to a popular audience to convince its members to deny the immediate reality of said conscious experience. This is a barrier for all science communicators of neuroscientific ethics and related topics, not just Sam Harris, and it indicates that this might be a particularly unyielding domain for science communication of the broader project or otherwise. Specifically in TML, though, Harris’s “solution” of framing the neuroscientific explanation in dualistic terms fails to clear this barrier as the confusion generated by that framing (the vacillating identification of self, the conflicting comments on personal responsibility, and the prompted question of how the subjective experiencer can be so disconnected from the mind-brain) clouds the effort at science communication and confounds the attempt to really lay out a materialist, monistic theory of subjective experience.
Conclusion

In this chapter, I have argued that science communication of neuroscientific ethics faces special obstacles to clear communication with broad public audiences. Using Sam Harris’s discussion of free will and moral responsibility in Chapter 2 (“Good and Evil”) of *The Moral Landscape*, I have illustrated the difficulties inherent in communicating a materialist, monistic causal explanation of subjective experience to an audience who takes that subjective experience to be dualistic in nature. I have demonstrated that Harris’s explanation lapses into its own variant of dualistic separation of self from the mind-brain, and that this however unintentional dualistic account obfuscates the attempt to explain the conscious experience (however illusory or flat out mistaken) of free will in monistic terms. I speculate that this failure of communication may be peculiar to Harris’s own literary style, but that it is at least potentially rooted in the more general intrinsic tendency of popular communication to be conducted in dualistic terms and an underlying need to avoid discussion of the hard problem of consciousness.

I have noted, too, that this avoidance of the hard problem of consciousness interferes with the communication of neuroscientific ethics. Many topics of discussion within neuroscientific ethics – causality, free will, moral responsibility, moral motivation, etc. – involve assumptions regarding the broad relationship of the brain to the mind (to the self). While neuroscience can function without a detailed explanation of the mechanics underlying these assumed relationships, the demands placed on popular audiences to deny their immediate experience in favor of neuroscientific explanation, without
explanations of how exactly the brain causes their immediate experiences, may be too much to ask. Without progress towards solutions to the hard problem of consciousness, communication of neuroscientific ethics may remain a particularly difficult topic of science communication.

The fact that contemporary neuroscientific accounts might clash with widely held intuitions and beliefs about the nature of conscious experience and free will is not relevant to whether these accounts are correct. Obviously scores of long-cherished folk beliefs have been contradicted and overturned by scientific inquiry. However, whether contemporary neuroscientific accounts of free will, conscious experience and the like are correct is not relevant to my purposes in this dissertation. The important factor is that a scientific approach already represents a non-traditional approach to ethics, a domain historically held to be under the purview of theology, philosophy and other more humanities-oriented approaches. These inherent conceptual clashes beyond the extant methodological clash represent barriers on top of barriers to popular science communication. In Chapter 3, I expressed a concern that successful popular science communication may be premised on already-interested, already-invested audiences such that communication with truly broad lay audiences may be a pipe dream. The difficulties in this brief sub-study can serve to augment that conclusion by noting that science communication in certain domains may be particularly futile. This may lead us to rethink approaches to the broad popular science communication of special, particularly thorny topics, and it gives us another reason to take a closer look at the taxonomy of popular science communication and what it is trying to accomplish.
In this dissertation, I have conducted a close-reading literary analysis of Sam Harris’s *The Moral Landscape* in attempt to shed light on the long-standing problem of the poor execution of popular science communication. I had initially hoped that *The Moral Landscape* and similar texts from the understudied category of general audience science books could serve as models of excellent science communication between expert scientists and broad, lay public audiences. In Chapters 1-3, I argue, however, that not only should *The Moral Landscape* not be used as a model, it should not be considered an act of popular science communication at all. Its limited range of science, antagonistic orientation to a wide variety of groups likely to comprise lay audiences, and negative literary aspects I outline in Chapter 3 collectively interfere with the text’s capacity to engage lay public audiences. By all appearances, the reported clarity of *The Moral Landscape* is intertwined with the fact that it “preaches to the choir” and relies on audiences to already have a substantial background in the science to be discussed, as well as already having committed to the primacy of science as the (if not the only) authoritative means for the production of knowledge. These assumptions are unwarranted in lay audiences, so it is likely that whatever clarity *The Moral Landscape* achieves is highly contingent on its restricted intended audience. If the findings of this study are typical of the clarity achieved by other general audience science books, then this genre would be collectively unpromising as a source of models for the broader science communication project.
In Chapter 4, I make an auxiliary argument that popular science communication in particular domains may be especially difficult. I use a subsection from the “Good and Evil” chapter of *The Moral Landscape* to illustrate the particular difficulties associated with attempting to communicate a controversial topic like a neuroscientific account of ethics. These difficulties extend beyond the primary difficulty of applying science to a traditionally religious and scientific domain. Because a neuroscientific account of ethics makes comment on the nature of conscious experience, it unfailingly comments on the reader’s own conscious experience. This causes both a language-based problem (the text must use dualistic terms familiar to broad audiences to communicate ideas that hinge on a materialist, monistic understanding of the relationship of brain and mind) as well as plausibility problems (because neuroscience lacks an explanation for how material arrangements of the brain can result in conscious experience, it is effectively asking readers to discount their conscious experience as illusory in favor of real, true arguments of neuroscience that nevertheless lack an explanation for how the illusory experience is generated). The central argument of the dissertation in Chapters 1 through 3 is that clear science communication may require more informed, invested and interested audiences than one can expect of lay publics. The connection of the argument in Chapter 4 to that central argument is that particular domains of science may inherently defy popular communication with lay publics to an even greater degree.

This paints a gloomy picture for the prospects of the broader science communication project. However, I maintain that even if general audience science books cannot be
wholly used as models for good science communication, there are still normative lessons
to be gleaned from texts like *The Moral Landscape*. First, the text can be salvaged for its
aspects that do contribute to clear communication. With the caveats mentioned in Chapter
3 – that science communicators ought to be careful with overstatement and be
forthcoming about the limits of the literary aspects they employ – the delimited positive
aspects of the *The Moral Landscape* do provide imitable techniques that could be
beneficial to the broader science communication project. Beyond its arguments, this
dissertation serves as a veritable catalog of examples of the use of these aspects.

Second, and perhaps more importantly, the categorized negative aspects of the text
provide beneficial examples of techniques for broader science communicators to avoid.
In some cases these examples teeter on the edge of obviousness; “don’t antagonize your
audience” and “don’t sarcastically insult your detractors” are hardly novel concepts in the
realm of literary decorum. These examples, though, get at some of the particulars of these
aspects and not just their superficial *Miss Manners*-esque components. Some antagonism
of audience, for example, is not overt, but really a consequence of efforts to characterize
and carve up subjects of study (e.g., conservatism, liberalism, etc.) that happen to be
potential belief systems of the audience. Omitting epistemological frameworks is a
particularly sensitive area since it is precisely this gap – the difference in contextual
knowledge base between expert and laity – that scientific communicators take themselves
to be struggling to overcome. The reminder just to be cognizant of the pitfalls of leaving
contextual information out is undoubtedly helpful, and illustration of the specific slips
Harris makes help facilitate this reminder. Similar sentiments apply to assumptions of
audience beliefs and values and the use of irony. Science communicators should avoid arguments that overly rely on intuitive or commonsensical premises, and they should recall that irony is only effective when literal meanings are actually shared.

Third, the negative aspects of *The Moral Landscape* serve as concrete reminders of what is actually present in popular science communication literature so that broader project communicators can aim not only to avoid it but also to combat its role in the popular associations that are made with scientists. Again, independent of the accuracy of the arguments, Harris’s style of delivery and claims become generally associated with science in the public sphere due to his relative celebrity as a popular science writer. The very lay audiences that the broader science communication project targets are likely to have been exposed to Harris’s work (directly or indirectly). His antagonism of audiences (especially, and obviously, religious audiences) is likely to have reinforced boundaries between science and the lay public. To carry on communication as though these boundaries were not there to be overcome would be a mistake. As I have mentioned, it is not enough to avoid the antagonism and omissions of *The Moral Landscape*; broader project communicators must consciously work to counter it. The concrete outline of Harris’s style and claims facilitates that effort.

Finally, even if the prospects of the broader science communication project are gloomy, this does not necessarily entail pessimism from proponents of science communication. It may very well be the case that *The Moral Landscape*’s clarity is entirely dependent on audience knowledge and shared values, and that no amount of careful borrowing from its
positive aspects will be able to overcome this need for an already knowledgeable audience. I.e., its clarity may be effectively rooted in the fact that its audience is not a true lay audience. And this may be typical of good, clear general audience science communication. Clarity could stem from bridging a smaller gap than that typically imagined of scientific expert to lay audience communication. Complex scientific facts and process may present too large of a gap for segments of the intended audience that do not already have a significant knowledge base and heavy interest and investment in science.

As I referenced in Chapter 3, if this gap (for certain audiences) is too large to bridge by adjusting specific aspects of communication, then perhaps the gap ought to be narrowed by changing the state of background knowledge, investment and interest of the lay public. This would involve a reaction not of pessimism, but of reevaluation of the aims of the project itself. Where ought participants in the broad science communication project expend their efforts? Any specific recommendations would be highly speculative on my part. But it seems that efforts to increase necessary contextual knowledge and generate greater interest and investment in science could, for a subset of lay audiences, help to render this gap smaller. This could mean redirecting some popular science communication efforts to be aimed at the young, treating the broader science communication project as supplementary to science education programs in facilitating more receptive audiences for the future.
I absolutely do not mean for these redirected efforts to supplant the present efforts of science communication authors. I.e., I do not think the entirety of public science communicators should start writing young adult popular science, however tempting the topic of vampire nutritional deficiency syndromes might be. Rather, I mean that a beneficial reaction to perceived futility in areas of the broader science communication project would be to recall that this problem does not occur along the isolated axis of experts and laity that the deficit model implies. The problem is more complex than this, and efforts to address it ought to be, too. While I adamantly recommend improvement of broad science communication technique via the normative lessons of *The Moral Landscape*, I recommend a wider imagination about the varied terrain of lay audiences and possible ways to address them, too.

There is one related final conclusion I have drawn from this study of *The Moral Landscape*, a conclusion that should inspire questions for future study. *The Moral Landscape* is typically categorized as a general audience book. But as I have argued throughout this dissertation, there is little reason to believe that it is truly intended for general, broad lay audiences. It is also, though, patently not a work of expert-to-expert communication. I have noted that Harris in *The Moral Landscape* is engaged in an alternate science communication project, one that does not have addressing lay audiences’ scientific literacy as its goal. Harris is still, though, explicitly and implicitly targeting a subset of the lay public. “Lay” is relative, and Harris’s readership is a fairly knowledgeable audience that must already be largely invested and interested in science as a knowledge generating enterprise. But again, it is certainly not expert. This
audience does not fit the typical model described by the academic literature on science communication. And neither does Harris’s text fit a dichotomous split between expert-level and general audience genres of science communication.

The academic literature on science communication, then, fails to capture the specifics of the place of Harris’s text and the audience he aims to address. This is possibly because of the pride of place of the deficit model of science communication in the literature. It orients the framing of the problem (as mentioned in Chapter 1) toward experts with knowledge v. audiences that lack that knowledge. This hard distinction of possession v. lacking establishes a somewhat black and white view of the science communication problem. This is not to say that this framing has not been effective in characterizing the underlying issues motivating the broader science communication project, those of public science/ific illiteracy. It is to say that such a black and white characterization misses finer details that are evidently characteristic of at least some instances of science communication. As such, it fails to capture the richness and variety of both audiences and texts in the domain. It may have been a useful heuristic in terms of dividing communicators work between efforts “for the academy” and “for the public.” But as levels of scientific knowledge become stratified amongst what was once an allegedly homogeneously “lay” audience, better categorization may be required to capture what is actually going on within popular science communication.

*The Moral Landscape* fails as an act of truly popular science communication. But it also represents a challenge to the extant simplistic split of science communication between
expert and general and the corresponding split between target audiences as expert or lay. It ought to inspire a closer look at the taxonomies of both “lay” publics and the varieties of science communication levied at them. Future directions of study, then, include empirical work to characterize and differentiate popular science audiences and conceptual work to better delineate the particular projects that different kinds of science communicators are engaged in. The latter would necessarily involve case studies of authors beyond Harris and would investigate how typical his work and communication of neuroscientific ethics are relative to these parallel cases. The extant taxonomy operates as though the salient outcome for all communicators were solely science communication’s effects on science/-tific literacy. I believe this is not only untrue, but that communicators who do take this to be the primary goal of their communicative effort would be better served by a deeper understanding of parallel communication efforts than by pretending everyone were engaged in the same projects and that all lay audiences were the same. This deeper understanding cannot be achieved without these future efforts toward better mapping the terrain of science communication on both the communicator and audience sides.

In sum, my case study of Sam Harris’s The Moral Landscape has produced normative lessons for participants in the broader science communication project. It also challenges how we categorize and understand popular science communication efforts and prompts

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87 It seems patent, for example, that science journalists have different incentive structures, aims and audiences than other varieties of science communication, and that these factors require a more detailed understanding in order to successfully engage science journalism as it relates to the broader project in critical analysis. Evaluating science journalists as though they were equivalent to scientists working purely in an endeavor to improve science/-tific literacy, ignoring the professional realities of deadlines, paper sales or click-throughs, etc., seems distorting if not downright misleading.
future efforts to more finely tune these categorizations and understandings. It accomplishes these aims while leaving criticisms and rebuttals of Harris’s arguments alone and addressing, as best as possible, the communicative aspects of the text per se. I hope this dissertation has demonstrated that our understanding of popular science communication can benefit from combing over texts of popular authors like Harris to discover how their work, however problematic or controversial, actually engages its audience, and who that audience really is.
BIBLIOGRAPHY


Spencer, H. (1851; 1869). *Social statics; or, the conditions essential to human happiness specified, and the first of them developed*. New York: A. M. Kelley.


Trefil, James S. (1997). One hundred and one things you don't know about science and no one else does either. Wilmington, MA: Mariner Books.


