

Philosophy, Theology and the Sciences

Volume 3

No. 2

2016

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The Evolution of Wisdom

My remarks in this editorial are necessarily very brief, but I have to say that the essays contributing to this special issue are some of the most fascinating I have had the privilege to read as part of our ongoing project on the evolutionary origins of wisdom. This research* has not been attempted quite in this way before and represents some years of working and discussing issues together as part of a project team since the summer of 2014. My conversations with Agustín Fuentes on this topic go back further to around 2010. We deliberately intend to present something of the liveliness of discussion by including two formal responses to Jonathan Marks' article, along with a number of shorter responses to articles by Julia Feder, Marc Kissel, and Agustín Fuentes.

The discussion element of this special issue will become obvious when reading the first article, which reflects an ongoing dialogue between *Agustín Fuentes*, *Neil Arner*, and myself. I have placed this article first for a number of reasons, not least to highlight the different kind of methodology we are intending to showcase here. In the first place, wisdom, as understood by many classical philosophers, was that which emerged through debate, dialogue, and listening to each other's perspectives. Second, our topic in this discussion is related to what could be termed the broader framing in which wisdom is discussed, namely, that of morality. So, according to our arguments presented in this paper, practical wisdom can be understood as a virtue focusing on the social goods of that community and, when translated into religious language, wisdom includes the transcendent dimension and thereby ultimately points to God's divine wisdom. Such a rendering might imply that divine wisdom is simply emergent in the human imaginary and arises from a translation of human wisdom onto a divine agent.

This kind of materialist reduction is resisted by theologians, who insist that divine wisdom is metaphysically prior to any human becoming. If we explore the moral discourse, a similar pattern ensues, namely, the extent to

* This research is supported by two grants from the John Templeton Foundation, *The Evolution of Wisdom* and *Human Distinctiveness* projects led by Celia Deane-Drummond and Agustín Fuentes. The opinions in this publication are those of the authors and do not necessarily reflect the views of the John Templeton Foundation. We are very grateful for their support and interest in this work.

which the moral sense builds on prior evolutionary patterns of behavior, and how far is it locally or contextually dependent on cultural, religious, or other factors. Our discussion on the evolution of morality highlights common ground among us, but also some interesting tensions arising from our different scientific, philosophical, and theological commitments. This discussion is important, since it sets the stage for a discussion of the evolution of wisdom that has not yet been tackled in a serious way in the literature to date. Wisdom, like morality, is notoriously difficult to define; so we all agree that much of the confusion in the literature can be cleared up by seeking to be clear on the particular meaning of morality in each case. The work of primatologist Frans de Waal, especially on primate empathy and inequity aversion, and his argument against what he terms the ‘veneer theory’ of morality, also featured in all our accounts.

Perhaps wisdom is not simply a subset of morality, but much more than that, including human imagination more broadly understood in terms of a nexus of relatedness more generally, as well as obligation and morality. This is the position taken by *Jonathan Marks* in the second article in this issue. He argues, convincingly in my view, that secular origin myths on the human privilege continuity rather than discontinuity in a manner that has some resonance with the continuity/discontinuity dialectic in our discussion of the evolution of morality. For him, the background to such assertions is that scientists may be reacting to creationist *ex nihilo* accounts of human origins. Or maybe genetics has high status and so helps reinforce the continuity thesis? But for him what is particularly interesting is the human tendency to make things seem rather more robust than they really are, namely by insisting on scientific precision over accuracy. But, at root, what he seems to think of as having solidity relates to his evolutionary biological presuppositions, namely, whether something leads to us acquiring the necessities of life or reproducing.

Something like human wisdom, morality, or even marriage is ‘fictive’ not because it is not real for those involved, but because it is constructed as part of our narratives about ourselves. But this is where *Robert Song* presses his case, for even the ability to recognize other kinds as different and make the necessary biological judgments requires a particular ontological commitment. He, as a theologian, eschews an emergentist thesis if this implies a residue of philosophical materialism. *Thomas A. Tweed*, on the other hand, points to the epistemic, aesthetic, and moral values embedded in the construction of narratives, even scientific ones. So, as Marks implies but does not spell out, it is false to claim there is a fact/value dichotomy between science and the humanities. The imaginary that Marks points to in human

becoming is also parsed out in Tweed in terms of cosmic crossings between this world and the next as well as embodied crossings in life style stages, both of which are specifically found in religious discourse.

Julia Feder's paper develops the evolutionary theory of niche construction that both Marks and Tweed discuss, but puts this to a new use, namely to engage with the literature on the emergence of religion, but now in dialogue with the work of Roman Catholic theologian Edward Schillebeeckx. For her, as Marks, it is the human symbolic imagination that is particularly pertinent in considering what might be in the background of a distinctively human form of wisdom. In particular, the ability of humans to imagine the seemingly impossible is a distinctly human act, and, through the lens of the theologian of hope (Schillebeeckx) opens up a gulf between what is and what could be in a negative contrast experience. How such negative contrast experiences begin to build a symbolic imagination captures Feder's attention as she weaves her way through interpreting Schillebeeckx in a fresh light. Moreover, and in a credible way, her analysis probes the extent to which symbolic thought as parsed through the thought of Terrence Deacon has captured the imagination of anthropologists, asking how far a sacramental theology that Schillebeeckx typifies can correct or at least question the earthen characteristics that lie behind symbol making. In other words, has anthropology, ironically perhaps, itself committed the error common to many theologies by becoming too abstracted from the world of the earthly and everyday?

The final article in this issue takes the discussion further again by probing a new way of considering the transition from human-like things to what eventually becomes recognizably modern humans. Like the other authors in this issue, niche construction features heavily again, but now *Marc Kissel* and *Agustín Fuentes* use that mode of becoming to probe the very deep history of the *Homo* lineage. I find this work particularly astonishing considering the time scales being investigated. More important, perhaps, the rhetoric of wisdom has opened up a fresh perspective on questions presupposed in the standard anthropological literature to be resolved. The out-of-Africa model for human origins, and the assumption that the transition to behaviorally modern from anatomically modern humans happened in a cluster around 200,000 years ago, starts to look more fragile than originally supposed. It is as if, to use Jonathan Marks' language, that accuracy has given way to precision. Though it would be hard to be precise at all about these scanty remains, that is, to insist on confidence in their solidity in terms of research, the cumulative evidence is still highly suggestive.

Although Kissel and Fuentes do not go into these aspects, it is tantalizing for theologians to consider the variety and traces of what seem to be more than practical workings out of the human mind. We are touching here on deep questions of the origins of a particularly human form of consciousness, but now cast in a different light from the standard brain/mind problem. And the reason is this: The earliest human brains with their capacity for some form of symbolic thought go back as far as two million years ago, well before any recognizable expansion in the *sapiens* frontal cranium. What this might mean for a theological interpretation of human origins, for the origins of the ability to think metaphysically, or for the evolution of wisdom is still unclear. But a transdisciplinary story has to be told, and told by those who are searching for answers together, even if their interpretations are through rather different lenses.

Celia Deane-Drummond, Notre Dame

Celia Deane-Drummond, Neil Arner, and Agustín Fuentes

The Evolution of Morality

A Three-Dimensional Map

The evolution of morality is both highly contested and the background to philosophical and theological accounts of the intellectual and practical virtues that comprise wisdom. Some evolutionary biologists argue that morality emerges out of a rich social complexity that has a deep history among particular species. Yet many social scientists press for the primary significance of a much more recent origin of morality as it emerged in tandem with religious beliefs and practices. A similar bifurcation exists among theologians. Some hold that evolutionary explanations suffice to account for the framework on which the further development of morality is based, while others claim that such an evolutionary basis is far less relevant for morality, which can only be explained in a satisfactory way with reference to theological matters. The authors of this paper illustrate how wisdom can emerge from the creative integration of work from both evolutionary theory and theology. We also draw some important conclusions about the pitfalls and insights that arise from scholarly discussion of the evolution of morality, while beginning from very different starting points and methodologies.

1. Introduction

This paper is presented as a sequential conversation between the moral and philosophical theologian Neil Arner, the evolutionary anthropologist Agustín Fuentes, and the biologist and theologian Celia Deane-Drummond. Our collaborative discussion in this paper highlights the insights and at least some of the pitfalls in the way morality has been discussed in evolutionary terms. We also offer constructive suggestions for improving the quality of work on the evolution of morality. Chief among such proposals is exercising greater care in attending to matters of definition, universality, scope, and evidential basis. Yet, because our respective portrayals of these issues differ, we invite readers to consider the merits of each perspective.

We are all critical of loose definitions of morality that currently prevail, so we agree that a more refined approach is desirable and necessary to avoid

confusion. We differ, however, in the extent to which relative ignorance about the inner workings of animal minds amounts to an insurmountable barrier in the interpretation of other animals as moral agents. Arner is reluctant to attribute particular inner states to nonhuman animals, so he recommends a more constrained account of morality. Fuentes warns against the inclination to anthropomorphize and offers alternative explanations of primate behavior that require no appeal to morality. Deane-Drummond argues that, whether or not we allow for a generous reading of animal intentions, human beings have co-evolved with other animals; thus, close interactions with animals have, at least in part, helped to shape what has eventually come to be counted as human moral action.

2. Bivalent Anthropology and Bipartite Wisdom (Neil Arner)

Literature about the evolution of morality has burgeoned over the last few decades. Much of this work is fascinating and provocative, but it is often encumbered by a lack of conceptual clarity. Writing in the 1970s as this work was beginning to proliferate, philosopher Thomas Nagel presciently warns, “The usefulness of a biological approach to ethics depends on what ethics is” (Nagel [1978] 1980, 196). In these remarks I will seek to illustrate how refining some commonly used conceptual tools opens productive lines of inquiry toward a bipartite wisdom that integrates work from anthropology and theology.

Rather than speaking in sweeping terms about evolutionary studies of morality, I will focus my analysis on the work of a single primatologist. I do so in order to model how we scholars hold one another accountable for our claims. I cannot interrogate a field of study, but I can present critical arguments to another person. Likewise, by analyzing the work of a particular author, I become liable to others who can hold me accountable for the fidelity of my representation and the quality of my criticisms. The person whom I have chosen as a representative of recent evolutionary studies of morality is Frans de Waal.

As a leader in the field of primatology and a best-selling author, de Waal has garnered praise for being among “the most influential people in the world” (“The Time 100” 2007). This prestige derives from de Waal’s creative reflections on what the study of nonhuman primates may tell us about diverse human matters: sexuality, mourning, aggression, peacemaking, child-rearing, morality, religion, social organization, and political manipulation. A review of his most recent book in the journal *Nature* praises his “tour de

force of scholarship” for offering “a synthesis on all levels, masterfully marshalling ethology, psychology, philosophy and anthropology” (Boehm 2013, 312). De Waal’s academic and popular renown, therefore, qualifies him to serve as a suitable case study of current work on the evolution of morality.

Given de Waal’s stature and influence, I judge it unfortunate that he has propagated the notion that contemporary primatological observations can ground the classification of human nature as possessing a core that is thoroughly ‘good natured.’ There are several problems attending this argument, including undue neglect of the distinctive developments within the *Pan* and *Homo* genera since their evolutionary divergence from a common ancestor several million years ago. I have written elsewhere about the philosophical knots that result from following de Waal’s arguments to their logical conclusions (Arner 2014, 277–78). Here, I will focus on yet another weakness in de Waal’s evolutionary account of morality.

The primary foil against which de Waal defines his own stance is what he labels a “quintessentially Calvinist” doctrine of sin (de Waal 1996, 17). This doctrine is often equated with the claim that humans are ‘totally’ depraved. De Waal thinks that this theologically-tainted anthropology has unconsciously directed the work of even secular scientists, many of whom advocate what he calls a ‘veneer theory’ of human nature. According to this view, morality is only a thin cultural gloss laid over “an otherwise selfish and brutish nature” (6). The alternative view promoted by de Waal is that higher primates in general are ‘good natured’ at their core. In support of this generalization, de Waal marshals numerous anecdotes of nonhuman primates who demonstrate what he labels “empathy,” “reciprocity,” “fairness,” and “community concern” (21–33, 43–58). Thus, moral action requires primates – humans included – not to act against their intrinsically amoral nature but with their essentially moral nature (55)¹.

Now, I judge it a fool’s errand to search for a purely good or purely bad core of human nature. Surely the horns of this dilemma must be split by affirming that humans are fundamentally capable of both remarkable altruism and barbaric atrocity. Humans can exceed not only the violence but also the caring behaviors of other primates, quixotically suggesting that our zoological distinctiveness may in part consist in our radically bivalent moral character. We can be both *better and worse* than any of our primate cousins.

An alternative, twofold account of humanity is in fact what is captured by the particular theological tradition de Waal thinks he has refuted with his

1 Thus de Waal shares responsibility for oversimplifications of his work that end up being reproduced as book blurbs – like the review claiming he has delivered “proof” that “humans are not selfish” (Medwick n.d., cited on the paperback cover of de Waal 2009).

evidence of chimpanzee empathy. De Waal singles out for criticism Calvinism, a distinctive lineage of Christianity arising from the teaching and practices of the sixteenth-century theologian John Calvin. Now, the Calvinist doctrine of human depravity did exert a broad influence on the intellectual atmosphere of both Europe and North America for several centuries, so it is appropriate for de Waal to scrutinize this particular theological tradition. I contend, however, that Calvin's view of human nature is not in any direct way refuted by de Waal's primatological evidence². To the contrary, Calvin's theology can serve as a fertile source for prompting new thinking about the evolution of morality. If even this historic and infamously somber theology offers resources for constructive engagement with contemporary anthropology, then there is good reason to expect that more recent and more optimistic theological traditions can likewise offer positive contributions to the evolutionary study of morality.

The first step to ascertaining why a Calvinist account of human nature is not falsified by evidence of primate empathy involves recognizing that Calvin thinks the human inclination to evil is total or complete not in an *intensive* sense but in an *extensive* sense. He does not convey humans as rotten all the way down and merely covered with a hypocritical veneer of kindness required for social cooperation among rogues and bandits. Instead, he regards humans as having a dual character that results from being created by God as inherently good but having subsequently become tainted by sin. Thus, the corruption of sin extends to *every* human faculty – understanding, will, emotions, and desires – but does not destroy *any* faculty to its core (Calvin [1559] 1960, book 2, chapter 1, §§ 8–9). Calvin's stance, which we might call a 'bivalent moral anthropology,' conveys humans as possessing a motivation springing out of which can issue acts of either profound goodness or horrendous evil.

Before expounding Calvin's anthropology more fully, I wish to offer two asides. One concerns the historical precedents that provide reason to *expect* conceptual affinities between Calvinism and scientific – especially evolutionary – theorizing. First, historian of science Peter Harrison argues that early modern Europeans' belief in human depravity is a significant

2 It is irrelevant for my purposes here whether Calvin is an apt representative of 'Calvinism.' My aim is to show that there exists at least one theological stance that is immune to de Waal's putative falsification of the doctrine of sin and congruent with facets of his evolutionary account of primates' 'good nature.' Moreover, historian Richard Muller argues quite comprehensively that "the contemporary understanding of 'Calvin against the Calvinists' rests on several misapprehensions," so this contrast is itself ill-conceived (Muller 1995, 356; see also 1996).

inspiration for the very invention of scientific methods of inquiry (Harrison 2007). Second, Charles Darwin's chief American advocate, Asa Gray, is an avowed Calvinist who judges that "the high Calvinist and the Darwinian have a goodly number of points in common" (Gray 1880, 102). Third, one Calvinist leader of the nineteenth-century 'Princeton theology,' Benjamin B. Warfield, affirms that "there is no *necessary* antagonism of Christianity to evolution" so long as one affirms "the constant oversight of God in the whole process" (Warfield [1888] 2000, 130–31). These examples place my own argument in a historical context that illustrates a tradition of constructive engagement between Calvinist and scientific thought.

My other aside concerns the distinguished legacy of not only theologians but also philosophers who have endorsed a bivalent account of humanity's fundamental moral inclinations. Far from being idiosyncratic, Calvin's view is broadly shared by many who have written about morality. For example, Immanuel Kant's enormously influential ethics is premised on the supposition that humans possess "two equally self-subsisting transient causes" of human behavior: an original predisposition to good and a mitigating propensity to evil (Kant [1793] 1996, 63, 89, 92).

Calvin's bivalent anthropology is evident in the very first lines of his *Institutes of the Christian Religion*, the definitive source of systematic theology from the headwaters of the Protestant Reformation. Calvin opens this massive treatise by speaking of wisdom as that mutually-implicated knowledge that arises from the study of *both theology and anthropology*. He states,

Nearly all the wisdom we possess, that is to say, true and sound wisdom, consists of two parts: the knowledge of God and of ourselves. But, while joined by many bonds, which one precedes and brings forth the other is not easy to discern (Calvin [1559] 1960, book 1, chapter 1, § 1).

Calvin goes on to explain that reflection on humanity leads naturally to the recognition that people are not self-subsisting beings but are instead the recipients of God's gracious gifts of existence and vocation. Humans are far from being rotten to the core, for they can ascertain truths about the good God from analogical knowledge of themselves.

Yet the study of God also has anthropological relevance for Calvin, because one's account of humanity is influenced by one's depiction of humanity's cosmic context. He continues, "As long as we do not look beyond the earth, being quite content with our own righteousness, wisdom, and virtue, we flatter ourselves most sweetly, and fancy ourselves all but demigods" (book 1, chapter 1, § 2). It is only by looking beyond themselves to contemplate the goodness and wisdom of God – whom Calvin calls "the straight-edge to which we must be shaped" – that humans can ascertain the extent

to which they have deviated from their true end. That divine vocation is to instantiate in the material world the moral properties of the world's immaterial creator (book 1, chapter 1, § 2). According to Calvin, then, humans cannot appreciate the moral ideal toward which they ought to strive merely by consulting their primate cousins; they must also look to God in consideration of what is required to be united with the Holy One.

Note that Calvin does not force an *either/or* dilemma, as to compel Christians to choose between replying exclusively on either natural sources or supernatural sources in the pursuit of wisdom. Instead, he counsels a *both/and* approach whereby wisdom is learned through the mutual enrichment and refinement that comes from studying both humanity and God. Note furthermore it is his theology that motivates him to attend to anthropology. Calvin judges that ignorance of nature, which includes humanity, will lead to a misapprehension of God and the loss of sound wisdom. I have thus far attempted to show that Calvin's doctrine of sin is not actually falsified by de Waal's evidence of primate prosociality. I will next illustrate the absence of contradiction in yet another manner, showing a positive consonance between de Waal's evolutionary anthropology and Calvin's doctrine of the natural moral law. I claim that Calvin could affirm – with some qualifications – the following optimistic assertion by de Waal: “We are designed in body and mind to live together and take care of each other. ... Instead of being a thin veneer, morality comes from within. ... We are born to be good” (de Waal 2013, 42).

Calvin can affirm even more straightforwardly than de Waal that humans are teleologically oriented toward caring for others. Whereas Calvin believes in a God who creates people with the purpose of loving their neighbors, de Waal can only speak metaphorically of a human ‘design’ to be caring. When speaking less floridly and more scientifically, de Waal is only entitled to state that it is a happy contingency the unguided processes of evolution produce morally self-conscious agents who more often care for conspecifics than consume them.

Calvin could furthermore concur with de Waal's claim that morality – at least when construed as a capacity for genuinely loving others – arises from within humans as an inborn orientation. Calvin holds this to be true because God “engraves” an “inward law” of moral rectitude upon human hearts (Calvin [1559] 1960, book 2, chapter 8, § 1). Thus, all humans – believers and nonbelievers alike – possess an “innate power to judge between good and evil” (book 2, chapter 2, § 23). The capacity for moral discrimination subsists within all humans precisely because God has indelibly inscribed it there.

Though Calvin has little to say about the mechanism by which God instills this inward moral capacity, he clearly holds that divine causation can be manifested through the mundane affairs of the natural world. He distinguishes divine and ‘primary’ causation from ‘secondary’ and natural causation. The former enables and employs the latter as a means, so natural causes are no less divine simply because they are manifested materially (Calvin [1559] 1960, book 1, chapter 22, § 6). This is a crucial theological distinction that is overlooked by numerous scholars who seek to undermine theological views of morality on the basis of evolutionary considerations³. Contemporary theologian Sarah Coakley states the error and the corrective quite clearly:

It is vital to avoid ... the presumption that God competes with the evolutionary process as a (very big) bit player in the temporal unfolding of natural selection. ... Rather, God is that without which there would be no evolution at all; God is the atemporal undergirder and sustainer of the whole process (Coakley 2013, 377).

Calvin obviously knew nothing about the theory of evolution, but a contemporary Calvinist might hold that one way in which God instills in all humans a capacity for moral discrimination is via the processes of evolution. Thus, de Waal criticizes a caricature of a Calvinist account of human nature by claiming “religion,” monolithically construed, teaches “that humans don’t know how to behave and that someone must tell them” (de Waal 2013, 23). To the contrary, Calvin denies that humans are “utterly blind as to the conduct of life”; indeed, he holds “there is nothing more common than for a [human] to be sufficiently instructed in a right standard of conduct by natural law” as that moral requirement is ascertained through the inward promptings of conscience (Calvin [1559] 1960, book 2, chapter 2, § 22).

By attending to Calvin’s doctrines of sin and natural law, I have attempted to show how the thought of a particular theologian is – contrary to de Waal’s own assertions – congruent with some evolutionary reflections on morality. I now conclude by considering how both anthropologists and theologians could make constructive advances by extrapolating from this consonance in the pursuit of what Calvin calls ‘true wisdom.’

If anthropologists adopt a bivalent anthropology, then they would do well to focus on identifying those conditions under which humanity’s dual

³ A particularly bald commission of this error is made by Marc Hauser and Peter Singer when they claim that “it is our own nature, not God, that is the source of our species’ morality” (Hauser and Singer 2005/2006, 19). From a Christian perspective, divine and natural causes do not compete for explanatory force in a zero-sum manner. A closely-reasoned explanation of this noncompetitive relationship is provided by theologians Kathryn Tanner (Tanner 1988) and William Placher (Placher 1996).

inclinations for good and ill are most likely to be actuated. Much is at stake socially and politically in determining the particular conditions in which humans with dual inclinations are prone to manifest empathy, aggression, or indifference. Such inquiries seem congenial to the bio-cultural anthropology promoted by Jonathan Marks (Marks 2016, in this volume) as well as the emphasis on phenotypic plasticity, niche construction, and multilevel selection among advocates of the “extended evolutionary synthesis” (Laland et al. 2014; see also Müller and Pigliucci 2010). If humans are neither inherently good nor inherently bad because they possess a pliable character shaped by their environments, then it is of utmost importance to understand the situations, practices, and institutions that best promote their nobler instincts.

Furthermore, if something like a Calvinist account of the partial impairment of all human faculties is correct, then the current fad among some evolutionary biologists – substantially initiated and fueled by de Waal – of pursuing the *emotional* rather than the *rational* causes/correlates of moral behavior may ultimately prove disappointing. Child psychologist Paul Bloom and philosopher of mind Jesse Prinz forcefully challenges the suggestion that empathy is a reliable foundation for morality (Prinz 2011; Bloom 2014). They argue empathy motivates action only weakly, responds parochially and prejudicially to those most like the agent, and misleads people under conditions of active manipulation or large-scale judgment. Rather than seeking a single capacity that reliably leads humans to act uprightly – reason, empathy, parental affection, etc. – attention may be more fruitfully directed toward identifying the circumstances in which agents with dual capacities for good and evil are most likely to actuate the former and subjugate the latter. Theologians can likewise benefit from taking seriously the preceding sentence. Those who share Calvin’s convictions that sin partially impairs the mind and that conscience is one source for moral discrimination have reason to attend to empirical studies of prosocial emotions in human and other primates. Emotional dispositions can be sound moral guides, even as reason can be morally misguided. Those who are sympathetic to Calvin’s theology will not rely on a single faculty alone but will look for consonance and mutual correction among the moral inclinations of all human faculties.

Lastly, I propose that theologians would benefit from adapting their scholarship to conform more nearly to Calvin’s suggestion from the start of his *Institutes* that theology and anthropology should be mutually-implicated inquiries in the search for wisdom. In particular, theologians would do well to revive a fourfold distinction endorsed by Calvin but thematized at least

as early as the fourth century by Augustine of Hippo. He distinguishes four states of human nature: as God originally intended it to be, as corrupted by sin yet partially healed by God's common grace, as corrupted by sin yet substantially healed by God's special grace, and as completely and permanently healed in the presence of God. In short form, these states describe humans as being able to sin, unable not to sin, able not to sin, and unable to sin (Augustine 1955, §§ 105, 118; see also the similar fourfold scheme by Boston [1727] 1811). I think theologians have generally done an inadequate job of distinguishing which state of human nature they have in mind when they engage with literature on the evolution of morality. By being more precise, they might explain with sufficient nuance how God's universal or 'common' grace is mediated to humans through the evolutionary emergence of moral capacities.

In the preceding remarks, I have challenged the aspiration to classify the core of human nature as simply good or simply bad. I instead propose that an alternative conceptualization – a morally bivalent account of humanity – is more broadly consistent with particular strands of both anthropology and theology. I also suggest that refining the manner in which divine and natural causation are usually portrayed can more faithfully represent a Christian perspective on the natural sources of morality. One salutary effect of this latter reconceptualization is that the typical antagonism between scientific and theological views of morality may be somewhat softened. I have attempted to illustrate the possibility of such convergence with specific reference to the thought of Calvin, whose theological stance de Waal mistakenly takes to be categorically opposed to his naturalistic perspective on the origins of morality. Calvin provides an integrated outlook according to which bipartite wisdom is attained through the mutual investigations of both anthropology and theology.

3. Are We Really Talking About Morality? A Few Pitfalls in Seeking Basal Facets of Morality in Other Species (Agustín Fuentes)

In this essay I take to heart Neil Arner's suggestion that anthropologists "would do well to focus on identifying those conditions under which humanity's dual inclinations for good and ill are most likely to be actuated." Here, I provide an attempt to illustrate a few of those conditions from the perspective of an evolutionary anthropology. Unlike Arner, I will not use one specific individual as a focal point for my analysis, but, in concert with the previous essay, Frans de Waal does make an important appearance.

'Morality' and scenarios for its evolution have become particularly common topics in the evolutionary literature. This is likely because it is an inherently interesting topic and one that has core relevance to daily human lives. But neither of those reasons are at the center of much recent academic discourse on morality, especially across the biological and social sciences. Rather, as noted in our introduction, a major focus of late is on the evolution of morality with competing camps arguing that morality is either (a) a key component of social complexity and an emergent property of relationships with a deep evolutionary history, or (b) a phenomenon 'rooted in' faith practices or a religious infrastructure. In either of these cases the discussion connects intrinsically with themes in this special volume: wisdom (in humans and otherwise).

Here I propose that this debate can benefit from considering a biological anthropological perspective that focuses on social complexity, primate and human patterns, and, therefore, wisdom. While not ascribing to a premise that human nature consists of dual inclinations for good and ill, I do see the wide range of human behavioral, and perceptual, potential as rooted in particular conditions of evolutionary history and evolutionary present. One of the important facets (and probably most problematic aspects) central to discussions about the evolution of morality is the poor job of defining morality on the part of many scientists. This leads to a tendency for many efforts on the evolution of morality to talk past one another. In most cases, due to differing disciplinary worldviews and data-sets, many of the assertions about the appearance of and roles for morality are actually talking about a large cluster of perspectives, actions, behavioral codes, and beliefs rather than a particular unit or trait. A full treatment of this problem would require a massive review to set the stage. However, given the space available here I will focus only on a few points that, from the perspective of someone who studies primates (humans and others), are particularly salient. I will start with the notion of moral behavior in other animals.

There is little debate that other animals act altruistically on occasion and exhibit intense empathy and reciprocity. There is a growing trend (de Waal 2006, 2013; Bekoff and Pierce 2009) to argue that these behaviors form an evolutionary core of human morality such that we can see the roots of social justice or a moral tendency evident in the behavior and lifeways of highly social mammals. Drawing on my experiences as a researcher who has worked with both human and non-human organisms for the past twenty-seven years, I lay out some of this argument and examine it from a perspective I think is often missed. What if 'morality' is indeed a distinctively human pattern? What if mammalian social complexity creates processes and patterns

that via human eyes seem to reflect our conceptualizations of justice and social norms – a basal morality⁴? We often associate moral behavior with normative codes. Thus, when we see other animals behaving as if they shared some particular normative codes of conduct, we are drawn to the possibility that this reflects a shared ancestral feature for them and us. We assume that we have taken this feature to a more complex and dynamic level that we call morality. But is this an accurate interpretive frame?

Other organisms – take non-human primates, for example – do behave in ways that are predictable and thus expected (by other group members). That is, they have normative suites of behavior – patterns of behavior that they acquire as members of the social group and that they expect other members to exhibit⁵. I think this is the crux of many of these arguments for the notion of deep morality. Because we see other animals behaving in ways that look to us to be potentially ‘just’ or normative, we assume the animals, or the social system in which they exist, have the basal elements of moral codes. I suggest that this interpretation misreads the data and illustrates a particular type of anthropomorphism. What we see might not be the antecedents of moral behavior in the sense that humans consider – conceptualized moral norms, laws, rules, and ideologies. Rather, we observe that organisms have expectations in complex social relationships. When these expectations are disrupted, organisms react accordingly. Perhaps one might think of this as a kind of wisdom rather than budding morality, but more on that later.

Let me provide an example. In macaque monkeys (members of the genus *Macaca*, second only to humans as the most widespread primate genus), there are fairly discrete male and female hierarchies that vary, by species, from lax to strict. That is, as an individual grows up, a young female spends most of her time around her mother and her mother’s female relatives. The males come and go from that area spatially and socially. Young males stay close to this core cluster for the first few years and then begin to spend more and more time away until they leave the group in search of a new one (not always, but often). As a young female matures, she stays in this matrilineal

4 Here I will bypass a discussion of the common anti-evolutionary ‘primitivist’ approach where humans look to other animals for evidence of past human states. This is an error in that all organisms extant today are fully contemporary. While humans might share some ancestral characteristics with other animals, humans and those animals have undergone distinctive evolutionary histories since their common ancestor. Thus, the shared ancestral patterns might be expressed, utilized, or developed in very different manners.

5 ‘Expect’ means that, based on their experience over the life course, they become aware of the patterns of others and changes in behavior related to actions by themselves. This does not imply a process of reflective consideration of those patterns.

cluster, in this cluster of female kin, where there is a dominance relationship that plays out in a roughly hierarchical manner⁶. In this system, if a female has an offspring, then that daughter is treated as if she were a rank just under her mother.

What does this look like? The six-month-old infant daughter of a female high in the hierarchy can displace or even take food from lower ranking females who are older than her, even adults. This rank is not determined based on particular genes or the inheritance of particular behavioral capacities; it emerges instead from the social structure of the macaques and the particulars of who one's mother is. Maternal rank inheritance is a social expectation shared by group members. It is part of the social system in macaque society. If an adult female that a young infant walks up to aggresses towards the infant or behaves in a way that does not match the expectations of the dominance relationships of the group, then the female will be aggressed against by many members of the matriline. These are social expectations⁷.

I use this as an example to point out that in many organisms there are normative behavioral contexts, and behaving outside of those normative behavioral contexts, on occasion, can produce aggressive or other kinds of punishment behavior. Some researchers argue this is a form of rudimentary social justice because there is an expectation of moral/behavioral norms that form the kernel that humans adopt and expand into moral actions. I would not go this far. I say that social tradition, social context, and social experience are incredibly important. These form ubiquitous patterns in many social mammals, especially primates. Morality, *per se*, need not enter into the equation.

Many argue that, because of their extremely close phylogenetic relationship to us, primates like chimpanzees illustrate how humans might have extended these basal capacities. As Arner also notes, it is important to point out that both humans and chimpanzees have been evolving separately for at least eight million years. So using them as direct comparisons to what our last shared ancestor looked and acted like is problematic.

6 Here 'dominance' refers to the priority of access to contested resources. Different females in the relationship find themselves at different levels in the hierarchy with reduced access to preferred resources the lower in the hierarchy they are. These hierarchies are mediated largely via behavioral means with serious aggression occurring but not being common.

7 Macaque female matriline rank is often related to how many female relatives (esp. offspring) a female has in the group, which loosely translates to the number of alliance partners one has in conflicts over resources and thus to the development of a hierarchy of expected outcomes to those conflicts (more allies, higher likelihood of winning contests). There is individual variation in this system as personality variables also help shape the expectations and outcomes of conflicts and alliances.

Frans de Waal's recent book uses the literary trope of a conversation between a bonobo (species of chimpanzee, *Pan paniscus*) and an atheist as a way to convey these connections, this sharing of basal cores of mortality and justice (de Waal 2013)⁸. He argues the bonobo could tell something to the atheist about morals and social justice. His bottom line is that we do not need religious convictions/experiences to have morality, since morality's roots are deep in the primate lineage. However, in a recent review of de Waal's book, I conclude by asking,

What would a bonobo tell an atheist? Nothing. She would try to get some food or other resource from the atheist, and if that did not work, then maybe try to get the atheist to let her out of the cage she is in. Once these entreaties failed, the bonobo would realize that the atheist has nothing for her; she would get bored and move off in search of a more interesting social partner (Fuentes 2014b, 315).

Humans and bonobos are closely related genera and among the few extant ape lineages, but we are separated by millions of years of distinctive evolutionary trajectories. Humans and the other apes (chimpanzees, gorillas, and orangutans) do share some structures and patterns solidified in our common ancestors during the Miocene. But there are aspects of the human lineage that, because they are not found in the other apes or our last common ancestor, must have developed along the hominin and human lineages, such as by a distinctive capacity to alter and shape our niche by language, symbol, and meanings derived from more than the materiality of our social and ecological surroundings (Fuentes 2014a). While I agree with many of my primatological and anthropological colleagues that human moral systems do not need specifically religious structures or beliefs to exist, those systems do need humans. In the end, it is quite possible the other primates cannot tell us very much about human morality at all.

I suggest this perspective is important because in this quest to understand something as complex as moral codes, human law, and behavior, we are often tempted to look at other species in a comparative approach to understand the evolution of such behaviors. In itself, this is a justifiable undertaking – evolution is about both continuities and discontinuities. However, in doing so, we run the risk of imposing expectations on these other organisms – specifically the expectation that the world of non-humans should be (or can be) defined in terms or patterns that make sense only in the light of human assumptions about normativity and justice. For example, the decades

8 Of course, de Waal does not say a bonobo could actually talk to a human (Kanzi and other signing/lexicon using chimps aside). He is using it as a literary trope, not assuming any particular linguistic capacities for chimpanzees.

of attempts to teach apes to talk or to acquire and use human language failed because the construction, patterning, and system of language is distinctively human and not ape⁹. In trying to get apes to use a species-specific human system, we were asking the wrong question. The apes in these experiments became adept at using aspects of a human-imposed means of communication to do things that mattered for the apes (requesting food, drink, and favored items; directing movement; and manipulating social interactions and hierarchies between humans and the captive apes, etc.). But they did not engage in the symbolic, grammatically, temporally, and inter-subjectively dense meanings humans infuse into conversation – the apes communicated but did not talk¹⁰. In a similar vein, the endeavor to superimpose very human societal and philosophical perspectives (even their roots) in other animals obfuscates (or ignores) the possibilities other organisms develop and are immersed in systems that constitute other kinds of logic(s).

A starting point to ameliorate this problematic approach would be to ask what the function of morality is for humans, a parallel approach to Arner's call for thinking about conditions. Then, we would need to see if these functions (as noted in humans) have salience in the social lives and ecologies of the other organisms. This approach focuses on a comparative evolution of practice/behavior that achieves particular functions. One can see elements of such an approach in the recent case for attempting to model a cross-species analysis of behavior and outcomes associated with inequity and then linking that to potential practices of 'justice' in other animals (Brosnan 2012).

Is there some way we could identify and determine the functional outcomes of human morality such that we develop an evolutionary scenario or some other way to explain why an amount of effort would go into the long-term maintenance of a particular behavioral profile that we are going to call morality in a non-human animal? De Waal would probably argue that this is what he has been doing across much of his work (de Waal 2006, 2013), but there are also many (including both of my collaborators in this article) who would argue he has not fully engaged with the actual constitutive, philosophical, and theological aspects (or the diversity) of human morality

9 Apes have their own communicative systems, some of which shares commonalities with the overall human communication system but none of which consists of that specific part of the human system that we call language.

10 Similar arguments can be made for dogs, who can learn to understand many more commands and specific 'words' than apes, and for parrots, who can retain and respond to a larger 'vocabulary' of human words. But in neither case do these animals engage in linguistic discourse with humans.

in the process. Many have argued that human moral norms are used as enforcement, to create and defend rights, and to facilitate group cohesion or to establish order in complex hierarchical societies. That is very possible. However, if one looks at moral codes and behaviors across different human societies living today, you find a wide range of expectations and a very diverse set of definitions for what indeed is 'moral.'

Consider marriage in humans. There are some shared patterns in moral behaviors and expectations associated with marriage. But if you get into details, there is huge variation in what marriage means and how it is institutionalized, experienced, and enforced in different societies. I think we have to be very, very careful about using a gloss term such as *morality* or *morals* when trying to develop generalist models or explanations for evolutionary processes for shared behaviors and perceptual landscapes across different species. My preference would be to look closely at particulars within moral systems (and the conditions of moral behavior) and try to find common functional threads that may have connectivity of function, outcome, or practice in other complex social mammals.

For a final example, one common human moral pattern is prohibition on some types of homicide. It is a common moral pattern. But in each case, in every society that one looks at, there are exceptions to those moral norms. Those patterns of exceptions are often tied with identifications or definitions of kin, politics, regions, ethnic groups, clans, or other symbolically mediated, historically connected, and often arbitrarily (in an evolutionary sense) assembled clusters of relational narratives. Given that, I think there is something interesting and distinctive regarding formation of identity, of self and other, and complexity in humans. If you take a summary survey of a variety of different kinds of moral codes related to murder, you might not actually see clear and consistent identifiable adaptive functions or outcomes that have meaning outside of the cultural, political, and historical context in which they exist. That is, you cannot make a very coherent argument that there is a specific thing, and agreement on a particular moral code shared by all human societies, that emerges as a total injunction against murder. Within the specific moral codes one can find a range of different justifications and taboos.

I realize this is a simplification of the concept of homicide and its relation to moral codes across human societies. I am simply using this point to highlight the complexity of human moral codes. We should be cautious about using comparative assessments that assume humans all share one concept of morality that can be broken down into basal units manifested in other organisms. Though that appearance provides an evolutionary explanation

for why and how morality emerged for humanity, it is based on a misunderstanding of morality.

My punch line here is that social norms are extremely important in complex social mammals. When those norms are disrupted, there are behavioral repercussions. However, I do not think there is a deep underlying moral structure in social complex mammals that humans have simply elaborated. I think the human niche has developed in a distinctive direction over our recent evolution (the last million years or so). A product of that trajectory has been the development and maintenance of symbolically-structured shared intentionality and complex inter-subjectivity from which deeply meaningful and intricate social rules, conventions, and perceptions of behavior have emerged (Fuentes 2014a; see also Tomasello et al. 2005). These meanings and conventions may be one form of human wisdom.

4. The Evolution of Morality: An Argument for the Significance of Inter-Species Relations (Celia Deane-Drummond)

In this section, I pick up and develop the discussion that arises in Agustín Fuentes' account of the complex relationship between the evolution of human morality and social animals. I situate the specific quandaries that arise when dealing with questions about moral evolution from pre-human (putatively) animal-like ancestors in order to understand more adequately the human moral sphere. With respect to Neil Arner's contribution, I suggest that the question about animal 'morality' and human morality seems to reach a stalemate grounded on the impossibility of arriving at firm conclusions about both a definition of morality and what constitutes animal minds, including specific capacities and questions about levels of consciousness (for distinctions between morality narrowly defined and broader, evolutionary-based definitions that allow for the possibility of animal morality, see Deane-Drummond 2006). The main point I wish to make in this contribution is that the relationship between specific evolved capacities to act according to given biological norms and more explicitly theological interpretations of morality need not exclude these others. Even Thomas Aquinas, for example, was prepared to point to animals as *exemplars* for the human moral life¹¹ and spoke of forms of practical wisdom and prudence in other animals (Deane-Drummond 2014).

11 I am grateful to Adam Willows for pointing this out.

a) Dilemmas in Moral Evolution

The possibility that morality might be a characteristic that, like intelligence, could evolve has crept into the evolutionary and philosophical literature almost by stealth. Christian theologians, busy putting out fires created by conflicts over creationism and evolution, do not always seem to have noticed the creeping tendency for scientific narratives to take over what seemed like the last available bastion where theology might have something to contribute to a scientific discussion of humanity, namely, morality and ethics. Arner is among the few theologians who attends to this matter and seeks to illustrate the critical and constructive contributions theology can make to a discussion of evolutionary accounts of morality.

Biologists are prone to use the term 'morality' in a very loose way as a shortcut to indicate agreed frameworks for types of actions that seem to benefit a given community (its good). Yet biologists are reticent to specify the particular ingredients this might entail, for example, patterns of altruism, forms of cooperation, conscience, types of justice making, recognizable virtues, and so on. Morality, therefore, appears as the broadest possible behavioral basket into which these various characteristics get placed. It is not always clear what it might really mean to say that an agent is acting morally or not, except that a given community agrees on particular rules that orient actions towards socially beneficial ends. This definition is perhaps the lowest possible common denominator that can be agreed upon, though, as Arner has elaborated, such accounts of morality suffer in so far as they are very 'thin' and, with Fuentes, do not reflect the huge diversity of moral norms across different cultures.

This does not mean a discussion about morality in general is totally fruitless, but, like Arner, I believe sufficient care needs to be taken in using the terms, since there is a high likelihood those from different disciplines will talk at cross purposes. But a version of naturalism is now virtually taken for granted in analytical philosophy, so, according to Robert Audi, theologians at best are required to adjust their narrative to *non-reductive* naturalism in order to be given any kind of hearing (Audi 2013). In addition, a focus on *cooperation* rather than *selfishness* is beginning to take precedence as a core driver of evolutionary change, hence embedding what is widely recognized as important facets of morality into a discussion of evolutionary change as a whole. As Arner correctly identifies, the figure of Frans de Waal and his 'veneer theory' looms large in his insistence that primate behavior echoes that of human beings (de Waal 2009).

In the process, de Waal dismisses both religious (especially Calvinist) and Kantian versions of moral authority that have a decidedly deontological bent. The philosopher John Hare accurately argues that de Waal has failed to take into account what Immanuel Kant really meant (Hare 1996, 2012). For Hare, evolutionary accounts may be plausible depictions of how humans come to have moral capacities, but, like Arner, he resists the idea that evolutionary narratives are adequate in their explanation of moral judgments. However, both Hare's concentration on de Waal's misreading of Kant and Arner's focus on de Waal's misreading of Calvin as incorrectly bracketed under his 'veneer theory' is unlikely to be convincing for de Waal, since his underlying narrative is strictly naturalistic rather than theistic. Both Arner and Hare, however, do offer helpful insights concerning the philosophical problems inherent in de Waal's concentration on an empathetic 'core.' Fuentes' critique is, it seems to me, even more devastating regarding de Waal's inappropriate conclusions about human morality drawn from his observations of primate behavior.

Given that I am convinced by Fuentes' argument that primate behavior tells us relatively little about human moral action, what might a discussion of other animals contribute to debates on the evolution of morality? It is possible for human beings to allow all kinds of other creatures to be *morally considerable*, quite apart from whether such beings are thought to have any *moral agency*, and regardless of what definitions we might use to speak about morality. Underneath all such discussions lies a tension between human continuities with other animals presumed in evolutionary narratives and uneasiness about mitigating distinctions between humans and nonhuman animals. Those who emphasize continuity appeal to ethological research on intelligent and social species including dolphins, coyotes, bonobos, monkeys, whales, and so on. Those who emphasize distinctions are reluctant to collapse what seem to be specific human traits into that of other animals¹². At the core of this debate is a dilemma concerning how it might ever be possible to get into the mind of another creature, as Thomas Nagel famously suggested with respect to a bat (Nagel 1974).

12 See, in particular, the work of Phillip Sloan (Sloan 1999, 2015). He is critical of 'natural history realism' that he believes emerges post-Darwin when it is used to consider human beings (Sloan 1999). He tracks some of the reasons behind the shift from a traditional natural law approach to evolutionary ethics in the wake of Darwin. Drawing on the thesis of Erwin Straus, Sloan argues that the upright stance of humans opened up radically new ways of being in the world. Any putative gap between humans and other animals does not undermine the basis of the argument I am posing here, since it is the relational aspects between beings, including humans in their distinctiveness, that are most important.

Of course, to some extent the problem of entering into another mind also applies to other humans. But in that case at least it is possible, in theory, to interview candidates and ask for their self-assessment. Primatologists like de Waal rest their case primarily on an assumption that bottom-up, emotive-based tendencies are a sufficient explanation of morality, which does not require specific rules that are proxies for what we might call 'justice' (though he does allow for both). Yet even his account of moral emotions assumes animals have mental perceptions of fear, regard for others, inequity aversion, risk aversion, and so on.

The philosopher John Dupré detects a strong Cartesian tendency in comparative debates about humans and other animals (Dupré 2006, 218). For example, the case for animal rights presupposes that animals can suffer in a manner analogous to human beings. Dupré instead draws on Ludwig Wittgenstein in order to stress behavioral elements, thus avoiding the issue of how other animals might think or feel in an existential sense (220–22). He states, "It must be possible to explain mental terms through appeal to behavior," but, because any explanation can be fallible, some performances may not be intelligent (221). Wittgenstein's philosophy does not reduce intelligence to the relevant behaviors, but it comes pretty close to doing so in a dissatisfactory manner. What criteria, for example, might be used in the assessment of the validity of specific behavior if not constructed criteria that are still reliant on mental, Cartesian concepts?

Jacques Derrida's philosophical turn to other animals in *The Animal That Therefore I Am* was similarly critical of the legacy of Descartes. Using a graphic account of his encounter with a cat while naked in his bathroom, Derrida questions why he felt not only embarrassed but also embarrassed at being embarrassed¹³. He, furthermore, resists lumping together animals in their diversity in relation to human beings, as if they can be defined simply as 'animality' writ large (Derrida 2008, 48). The fact that animals cannot speak human language should not reduce their behavior to 'reactions' rather than 'responses' that are specific to commands (32)¹⁴. A singular 'animality' versus humanity persists in the work of Kant, Heidegger, Levinas, and Lacan, so, like Descartes,

13 "Before the cat that looks at me naked, would I be ashamed like a beast that no longer has the sense of its nudity? Or, to the contrary, like a man who retains the sense of his nudity? Who am I therefore?" (Derrida 2008, 5).

14 "The Cartesian animal, like its descendants (once again I'll try to recognize there Kant, Heidegger, Lacan and Levinas, which also means so many others), would remain incapable of responding to true questioning" (Derrida 2008, 84).

Not one of them has taken into account, in a serious and determinate manner, the fact that we hunt, kill, exterminate, eat and sacrifice animals, use them, make them work or submit them to experiments that are forbidden to be carried out on humans ... not one of them takes into account animal sexuality (89).

But Derrida's deconstructive complaint remains limited, for the only animal he dealt with in any detail was his cat, and his reflections were not based on anything more sophisticated than his own observations. I want, therefore, to ask the question, what happens to the perception of the evolution of morality once these various others are taken seriously? Clearly, only a few token cases will be touched on here in order to give an initial account of an inter-specific alternative.

b) Inter-Species in Evolution

In prior work, I have developed a theological anthropology that attempted to take account of the significance of the lives of other animals and evolution in human becoming. I also began to trace out arguments for what I termed *inter-morality* (Deane-Drummond 2014, 2015a), by which I mean the way decision making that has significant moral consequences arises, at least in part, from the interaction between species. Thus, in evolutionary terms at least, human morality is inter-morality and animal morality is inter-morality in as much as the nascent rules of behavior of a given species are in some sense caught up and entangled with that pertaining to the other species. Hence, inter-morality denies that species B was an 'external' factor in an emergent morality most characteristic of A. So far, I have drawn on ethnographic cases studies on the relationship of humans with hyenas in Ethiopia as discussed by Marcus Baynes-Rock (Baynes-Rock 2013), elephants in parts of Asia as discussed by Piers Locke (Locke 2013), and macaque monkeys in Indonesia as discussed by Agustín Fuentes (Fuentes 2012). In all cases, however, I was content to show that specific human behaviors and those of the other animals shifted as a result of intertwined contact, premised on a model of human evolution known as community niche construction (Deane-Drummond and Fuentes 2014).

The question of what precisely could be recognizable as an explicitly human *moral* behavior was largely unexplored. But if morality is defined in a broad way as those rules of behavior and affections that orient the individual towards the good for that community, then morality in mixed specific groups is far more complex than can be accounted for by thinking about a species in isolation. And my argument is that this also applies to humans in deep history in the manner Fuentes has discussed in his section of the paper.

For the purpose of this discussion, the definition of morality as applicable to social animals does not necessarily need to cohere with that of humans if the premise is that it is the *interaction* between our social worlds and theirs that is at stake.

Imagine that morality is on a scale from one to ten, with one being the least complex and ten being the most complex. Then even if humans in a ten morality interact with animals that have a one morality, that interaction is still significant. In the case of those animals with a one morality, there seem to be no rules in place for the particular 'good' of that species. Yet for humans, morality is complex, rational, self-conscious, and perhaps even defined according to theological norms. Irrelevant to the case being made here is whether there are different types or styles of morality in different cultures and traditions, or even across species. In other words, the argument to be made here is not simply that humans are at the top of the pile in a tower of morality (de Waal), once more putting humans in the position of supremacy. Instead, I claim that the morality of other animals, such as it exists or even does not exist, interacts with the growing sense of what is collectively agreed upon and considered to be right action in specific human communities, which are themselves situated in diverse cultural, geographical, and ecological landscapes.

I will show more clearly how this might be possible in an example of mutual interaction between species discussed by Elizabeth Marshall Thomas. Does this mean that it does not matter to inter-species interactions if these are specifically animals rather than plants or even rocks? In one sense, this is correct: It is the interaction between a species and the different elements of the natural environment that is crucial. The difference with respect to other animals is that they, including 'lower orders' such as viruses, insects, and so on, interact with and respond actively to humans and other creatures in a way that most plants do not¹⁵.

It is important not to be overly romantic about such interactions between species. Environmental philosopher Paul Shepard paid serious attention to the lives of other animals in human evolution, and he was not afraid to testify to the violence of such relationships. In particular, he argued that it was in the interplay between predator and prey that intelligence escalated and consequently brought the capacity to think ahead, consider actions,

15 As a botanist by training I am aware there are sensitive plants able to respond to human touch. The responsiveness is, however, similar to that of other animals, in that it depends on ion transport that works like a very simple 'nervous' system.

and think symbolically (Shepard 1998a, 51–66)¹⁶. Shepard also developed this argument in a blunter form. In particular, he argued that in contemporary society normal human psychological development would be arrested without close contact with animals during childhood, in as much as such contact provides a precursor to human roles (Shepard 1998b, 255). Thomas Aquinas said something similar when he claimed that cruelty to animals encouraged cruelty to humans (Aquinas 1969, q. 102, a. 6; q. 102, a. 8). However, Aquinas referred to restraint on abuse, whereas Shepard held that healthy psychology depends on close contact with other animals. Although Shepard does not discuss the evolution of morality, this is implied.

c) Inter-Species Morality

In this section, I will discuss recent ethological research challenging the common assumption, shared by Shepard, that domestication amounts to domination. I will also support the thesis that the process of domestication triggered important changes in attitudes and behavior in *both* humans and other species, including predators. Does some domestication at least emerge less deliberately through loose, mutually beneficial associations? The literature on multispecies in general is vast (Locke and Münster 2015), but it seems to me that the most promising analysis for unearthing evolutionary relationships explores patterns of domestication and predator-prey relationships. In order to make this manageable here, I will use just one case study.

Elizabeth Marshall Thomas recounts her long-term ethnographic study of the Bushmen, Ju/Wasi of Nyae Nyae, in the Kalahari Desert and their close interaction with wild lions (Thomas 2003, 73–78)¹⁷. When the lions came close to the Bushmen's camp, people either waved burning branches at them or spoke to them in a commanding voice, asking them to leave. It seems that on regular occasions lions did depart. Furthermore, Bushmen developed a way of interacting with a lion while traveling, moving slowly at an oblique angle from the lion without being molested. The ideal of peaceful relations with lions as predators, according to this account, is not just possible, it was witnessed in that society, even if it has subsequently broken

16 His idealized view of hunter-gatherer societies is troubling, to say the least. But his attention to the significance of other animals in human becoming is important, even if he is mistaken in some of his assumptions about the process of domestication.

17 While the Bushmen treated leopards as a 'dangerous nuisance,' they showed genuine respect for lions (Thomas 2003, 74). I am grateful to Marcus Baynes-Rock for referring me to this article.

down. Of course, in other regions such peaceful co-existence did not exist. Thus, Thomas speculates that where Bushmen are perceived to be on the same footing as the wild lions, the lions are treated well. Once the Bushmen accumulate domesticated animals, human-lion relationships start to change, and the lions become more aggressive.

Thomas also recounts a remarkable story of how a wildebeest struck by an arrow was surrounded by lionesses. The Bushman arrived and told the lionesses: "Old Ones, this meat is ours" (74), tossing lumps of dirt in front of them. The lionesses did not seem happy, and one growled, but they averted their eyes and then walked away. Such an encounter is one that speaks of not just automatic reactions but also of a particular response by wild lions to particular humans, built up through generations of contact. Thomas suggests the Bushmen's size, structure of society, basic need for water, and 12-hour feeding patterns (such that lions hunted at night) allowed for a truce to be built with lions sharing the same waterhole. She comments, "I think it is safe to say that the arrangement was intentional by both parties. ... In the Gautscha area, the cover was such that the lions could have been active by day if they chose, just as some lions are elsewhere" (76). The truce arrangement no longer exists, but the fact that it was possible at all is fascinating. Both species learned what could be termed specific forms of practical wisdom that allowed them to survive. It shows in a real way the kind of interaction possible in what I have been naming above as inter-morality.

d) Theology and the Evolution of Morality

Are such accounts of inter-species interactions problematic for Christian theology, as if undercutting either human uniqueness or the possibility that the perfected moral life is honed through obedience to divine commands? While I do not have scope to go into the details of an argument here, my suggestion is that theologians have much to gain from insights of ethnographers working at the human-animal interface. While this work challenges traditional accounts of human exceptionalism, by which I mean accounts that *de facto* excluded the importance of other animals, that are indebted to Enlightenment dualism, such dualism is not essential to Christian thought. The ancients, including classic writers such as Thomas Aquinas and his teacher, Albertus Magnus, were prepared to take account of scientific observations of their day and weave them into their theology (I have elsewhere discussed the significance of their work for theological anthropology and morality in particular; see Deane-Drummond 2014). Aquinas was also prepared to admit that other animals, and indeed other parts of creation, could act as moral

exemplars for human beings. Thus he was aware of the complex responsiveness possible between different creatures¹⁸.

The difficult judgments to make concern how much epistemological weight to give to naturalistic accounts of the moral life compared with theological traditions and the relative significance of philosophy in unraveling the confusions that may arise. In spite of the dangers of fragmentation, one of the ways forward may be to resist any attempt to speak of morality as if it were possible to define it as a whole. Instead, one could consider specific sub-elements such as compassion, justice, wisdom, and other virtues, along with duties, rules, responsibilities, goodness, and so on. Justice is an interesting case to consider since it seems to rely on certain external rules, but it can also be expressed in a more emotive sense of fairness (Deane-Drummond 2015b).

According to the classic Thomistic tradition, practical wisdom is the mother of all virtues, since it will set the 'mean' of what counts as a just action, what compassion means, and so on. Part of the difficulty here, as Alastair MacIntyre has claimed, is that it is hard to know whose justice or which rationality is at stake (MacIntyre 1988). One way theologians try to avoid relativism is by portraying God as the Commander in Chief whose dictates establish the demands of justice. But this theology is unconvincing both for those who do not believe in God and for those believers who disagree with this depiction of God. A rather different theological emphasis conveys grace as working with the specific capacities of humans in order to perfect them, so the action of the Holy Spirit in the human person illuminates what is perceived only dimly in the human mind¹⁹. According to this view, human fallibility is always possible. Thus, as Thomas suggested, practical wisdom or prudence is never such that it removes all uncertainties of mind²⁰. The deliberative phase of prudence or practical wisdom includes circumspection, which includes all areas of knowledge. I suggest that the tools

18 I am grateful to Adam Willows for highlighting the scope of moral exemplarism in Thomistic thought.

19 While it is possible to affirm both these positions, as Arner ably demonstrates, the emphasis on divine command, when institutionalized, can, potentially at least, exist in tension with the perceived work of the Holy Spirit in the life of the believer, as Roman Catholic debates on conscience testify.

20 For Thomas, right reason is the mark of moral virtue. On that definition, only rational animals are moral in the true sense. But his view can be nuanced by recalling his acknowledgments that all the virtues work together and that other animals share, at least to a limited extent, in prudential reasoning. But his claim on the limits of such reasoning is worth noting carefully: "Aristotle reminds us that we should not look for the same degree of certainty in all matters, but in each to the extent that the subject allows. Now, because the subject matter of prudence is composed of contingent individual incidents,

for practical wisdom were learned and honed through interaction with other species as well as within the human community. Graced virtue, if we wish to name it such, need not avoid those interactions or insulate human judgments from the complex community niche in which human decision making takes place. In as much as modern humans in the Western world have lost that contact with other creatures or at least an awareness of them, apart from domesticates, we have lost an element of wisdom. And a faulty wisdom means that human ability to make right judgments – justice making – is also compromised (the practical ethical implications of this argument are outside the scope of this short contribution).

5. Arner's Response to Fuentes and Deane-Drummond

In our collective quest to apprehend wisdom more clearly, I benefit richly from the contributions of my collaborators. Our responses here intentionally follow the example of Plato, an ancient 'lover of wisdom,' who finds dialogue to be among the most natural means of pursuing this aim. I will respond to Fuentes and Deane-Drummond in turn, noting what I have learned from each and how I think both might refine and advance their work.

Fuentes counsels us to exercise caution regarding anthropomorphism and moral universals. Drawing upon his own expertise in niche construction, he claims the human niche is 'distinctive' in relation to that of all other animals. Human social experiences have a subjectivity that is inflected by both symbols and shared intentions. Since we cannot ascertain whether nonhuman primates experience the same forms of interiority and meaning, we should refrain from anthropomorphically explaining their behavior by appeal to such experiences. Fuentes illustrates this descriptive restraint when analyzing an adult macaque who receives aggression from peers after striking an infant. He calls this reaction an enforcement of 'social expectations' rather than 'social justice' – the latter being a consciously and corporately acknowledged 'normative code' to which all are beholden. Fuentes concludes that "human moral systems ... need humans," which is either a truism or consequence of a tacit belief that morality is unique to humans owing to their distinctive capacities.

I concur with Fuentes' counsel regarding hasty anthropomorphism, but I invite him to specify the grounds for his judgment about the capacities

which form the setting for human acts, the certitude of prudence is not such as to remove entirely all uneasiness of mind" (Aquinas 1973, q. 47, a. 9).

required for acts of genuine justice or morality. Deane-Drummond offers an alternative position when she claims morality is “applicable to social animals” more generally. Yet the disagreement between her and him does not seem to be a matter of *empirical evidence* but of *philosophical speculation*. In my estimation, the source of many disputes concerning the evolution of morality lies in the latter domain rather than the former. Locating debates within their proper intellectual setting helps to clarify for all parties which standards of evidence, forms of argument, and authoritative sources are relevant to the dispute.

Fuentes also provides a helpful reminder about the anthropological facts of moral disagreement. He denies that one can find “agreement on a particular moral code shared by all human societies.” Since theologians have not always taken cognizance of broad moral diversity, I welcome the opportunity to respond to Fuentes’ empirical claim. First, agreement about the *content* of a moral demand/ideal is distinct from agreement about being *beholden* to some moral demand/ideal. Though humans may display widespread disagreement about what exactly ought to be done in a specific situation, they may show fairly universal agreement that demands or ideals properly bear upon human actions. As I emphasized when explicating Calvin’s account of the natural law, what he finds universal about morality is the *capacity for moral discrimination* rather than *concurrence about rules or cases*. Second, one who agrees with Calvin concerning the partial malfunctioning of all human faculties will *expect* to find moral disagreement among the human population. If neither reason nor affect can serve as an infallible moral guide, then diversity is bound to emerge. Fuentes’ attention to the empirical fact of moral dissensus, therefore, invites us to observe the distinctions between the *content* of morality, the *demand* of morality, and the *capacity* for moral discernment. I think we would all do well to employ this greater degree of specificity when writing about the evolution of morality.

As an illustration of the utility of these distinctions, consider that which Deane-Drummond presents as the main point of her preceding remarks: A biological account of the evolution of ‘moral capacities’ need not conflict with a theological account of ‘morality.’ If the lattermost term refers to the *demandingness* of morality, then she provides a fine illustration of the intellectual progress that is possible when one exercises terminological care. I concur heartily with Deane-Drummond’s primary claim, and I have attempted to show how Calvin’s bipartite account of wisdom illustrates just such complementarity.

A second helpful distinction made by Deane-Drummond concerns animals that are worthy of moral *consideration* and those that are moral *agents*.

I think she is right to say that one can be the former without being the latter. That distinction permits one to affirm that a sculpture, a species, an ecosystem, and perhaps even a human infant may deserve moral consideration even if one remains agnostic about whether those objects have moral agency. Making this discrimination also honors Fuentes' concern about hasty anthropomorphism.

What remains less clear to me is Deane-Drummond's *reason* for granting moral status to animals that may lack moral agency. If moral status is to be awarded proportionally to species based on the extent to which its members are 'entangled' or 'interactive' with humans, then some curious moral judgments follow. For one thing, a strong case could be made that the gut microbiomes in symbiotic relation to humans merit the greatest moral consideration within the entire ecosphere. What other organisms are more intimately entangled with humans? For another thing, urban-dwelling humans who have infrequent interaction with living nonhuman vertebrates would have license to grant moral respect primarily or only to humans. Yet that conclusion reinforces the "human exceptionalism" Deane-Drummond means to challenge. I wonder if a stronger case could be made for respecting nonhuman vertebrates – what I take to be Deane-Drummond's aim – by appealing to something other than an organism's utility or proximity to humans. I do not deny that inter-species interactions involving humans are morally significant encounters. I do question whether the intensity or frequency of interaction is a reliable guide to the degree of moral significance owed to a nonhuman species.

This three-way conversation thus helps me discover broader considerations requiring my attention and narrower terms deserving of my specification. I hope that this mutual exchange likewise proves useful to my collaborators.

6. Fuentes' Response to Arner and Deane-Drummond

In responding to my colleagues, let me first state that as an anthropologist (and one who works with both humans and other primates), and not a theologian, the arguments laid out by both Deane-Drummond and Arner suggest (to me) a dynamic theology, one that acts as a co-participant in the academy, engaging with other scholarly disciplines in a quest for better understanding. This assertion is an important one, as it locates our mutually interactive viewpoints in such a way that allows for fruitful and intellectually rigorous discourse while simultaneously allowing room for

some distinctive, even potentially incompatible, foundational commitments (Fuentes 2013).

Deane-Drummond and Arner both see morality as a prime locale for 'science-theology' dialogue and conclude that theology can indeed benefit from sincere interface with evolutionary approaches. However, each infers a slightly different mode of benefit (and some weakness) from such interactions, and it is in these inferences that anthropologically interesting questions arise.

Deane-Drummond notes that it is "possible for human beings to allow all kinds of other creatures to be *morally considerable*, quite apart from whether such beings are thought to have any *moral agency*." (132) She also sees a fertile ground in interspecies relationships as a venue for understanding the development and implementation of diverse moralities. It is in each species' *Umwelt*, their self-worlds, that specific attitudes and patterns emerge ('moralities' in this case), and the interfaces of these worlds create the possibilities and complexities of inter-morality(s). I consider Deane-Drummond's differentiation between moral consideration and moral agency to be crucial. I also agree with her (and Arner) that we need to move beyond simplistic searches for some form of moral 'roots' in other animals. Her call is then for a better understanding of inter-relations and thus of ourselves because much about who we are as humans becomes manifest in the ways in which we engage other species.

Arner is concerned with the primatologist Frans de Waal's quest for the evolutionary origins of moral agency and takes him to task for a superficial engagement with theological approaches. Arner seeks to represent more faithfully a Christian perspective on the sources of morality and the complexities of being human. In short, Arner faults de Waal (and, by implication, many other scientists who only nod to or deride Christian theology) for using a straw man argument of the nature and interpretation of sin. Arner suggests fuller understandings of Christian theological approaches involve more nuanced notions of agency and the inclinations of human nature.

I take both of these contributions to highlight the need to better understand what humans 'do' with other humans and with animals and how that is related to our own construction of moral rights, agency, and outcomes. The discourse on human morality (and its origins) is thus an inquiry into human agency and the deployment of what we term 'moral behavior.' Arner suggests theologians should heed Augustine's four-part categories of humans as being "able to sin, unable not to sin, able not to sin, and unable to sin" as grounding for their engagement with evolutionary approaches to morality.

Arner suggests such an undertaking is a quest to understand God's universal or 'common' grace as mediated to humans via an evolutionary cultivation of moral capacities. Deane-Drummond offers a related perspective according to which the Holy Spirit illuminates deeper meanings and provides grace that works with the capacities of humans to improve them.

Both of these are fascinating and well-developed perspectives. However, here is where many anthropologists might diverge from theologians, at least in the manner in which they begin their attempts to describe the underlying processes of human morality. In cross-cultural and cross-historical assessments there is wide diversity of what would fall under the heading of 'moral' in human societies. It is difficult, in an anthropological sense, to demonstrate that the term 'human morality' actually reflects a specific set of universal human perceptions or actions, or a specific underlying potential to be illuminated and cultivated. Of course, this is not a fatal blow to the theological arguments or to the search for shared moral processes, as there remains a degree of complementarity in much of the perspectives at hand. How we (humans) see others and ourselves and what traditions, assumptions, and worldviews we draw on shapes how we describe and assess the actions and ideologies we call 'moral.' It is increasingly clear that social, historical, and institutional contexts and their related perceptual landscape matter greatly in the construction of human world views, and that these world views are potent driving forces in behavior for humans. 'Morality' is real and very important for all humans, even if the details vary.

At the same time, as I noted in my essay, there is little debate that other animals can and do act altruistically on occasion and sometimes frequently, and that they can exhibit intense empathy and reciprocity. Both Deane-Drummond and Arner would agree with this but each might give a slightly different explanation for how this relates to human moral action and perception. The former is ready to make some constructive use of the study of the human-other animal interface in order to explore the patterns and processes that emerge. She is prepared to search for signs of what could be called *inter-moralities*, which I understand as the partial fusion and/or leakage of species-specific moral perceptions and actions out to others. The latter would encourage us to look more closely at the particular traditions humans draw on, in this case specifically Christian theological traditions, to get a better understanding of how humans construct our moralities and what guiding processes are at play. I see value in both approaches and am glad to have the opportunity to engage in this sort of dialogue as it makes me a better anthropologist and offers an enriched view of the complex intellectual landscape of conceptualizations and constructions of morality.

7. Deane-Drummond's Response to Arner and Fuentes

It occurred to me in reading the arguments presented by Arner and Fuentes that my own biography as a scientist almost inevitably comes into play in terms of my most formative years of training. The methodologies presupposed as adequate for the task differ in standard theological or biological anthropology; for the former, close attention to primary sources is the gold standard, while, for the latter, verifiably observed evidence is critical. Both, however, are either explicitly or implicitly creating a narrative about what it is to be human.

Fuentes' narrative is one with which I have a great deal of sympathy. But as a scientist, he tries to see morality in terms that could in principle be measured and observed. The difficulty of doing that in any satisfactory way makes it hard to come up with agreed notions of what morality is. Where there are some broad agreements, such as a prohibition of homicide, there are still variants. Naming *wisdom*, therefore, as a category that is amorphous but more specific than *morality* seems to be a step in the right direction, especially in the relational manner in which Fuentes perceives morality. Arner, for his part, provides a robust theological warrant for seeking wisdom through the contemplation of not only God but also nature. Though we three are still refining our depictions of wisdom, this conversation is an improvement on the current muddle concerning the evolution of morality.

Fuentes' view of moral capacities as emergent in human communities, and representing a decidedly 'human pattern,' certainly in some respects makes sense to me. It becomes almost impossible to avoid comparative rhetoric when studying the social lives of other animals. Speaking of animal morality is an experimental thesis, rather than something more solid, a heuristic tool that might tell us something interesting about animal behavior. On that basis, it is better to look at specific aspects, such as *justice*, and probe those²¹. But I firmly agree with Fuentes that basal morality approaches such as advocated by de Waal are likely to be misguided, not least because they are still liable to lead to demeaning attitudes towards animal social worlds. It is better, perhaps, to acknowledge important distinctions rather than opt for a pure 'ethic of continuity' towards other animals (for a Thomistic argument for an 'ethic of continuity,' see Berkman 2015).

21 Elsewhere I have argued that wild justice cannot readily be put on a comparative scale with human justice, but the interaction between human justice and what looks something like justice to us in animal communities is important (Deane-Drummond 2015). In other words, our social worlds are interlaced with numerous others.

De Waal avoids this issue by stressing, as Arner so clearly articulates, the 'good natured' aspects of primate behavior. But I am less sure, compared with Arner, that de Waal is quite as confident in the root goodness of primates. De Waal is prepared, for example, to talk about aggression in chimpanzees and other violent acts (de Waal 2007). His intention is to generate a narrative that corrects misguided earlier models of the biological primacy of selfishness and what he views as its theological correlates. But here an analytical problem arises: What does it really mean to be good or bad? What is good for a (common) chimpanzee will be different for a bonobo, and different from a human. We can expect variations dependent on captivity states and cultural and geographical communities right across the board of different species.

Arner delves into Calvin's corpus to show his understanding of human nature is not as universally pessimistic as de Waal thinks it to be. At the same time, I wonder how far de Waal can be criticized for naming Calvin in this light. Peter Harrison, who is a renowned scholar at the interface of the history of theology and science, makes the following comment about Calvin:

Total depravation, in this context, means that no faculty of the human mind – will, imagination, or intellect – retained its prelapsarian perfection. Calvin thus echoed Luther's sentiments about the corruption of the human intellect following the Fall, agreeing that the ancients had typically overestimated the powers of the human mind (Harrison 2007, 59).

Perhaps the problem in this case, as Arner also hints at, is that de Waal has not appreciated fully the Christian narrative of perfection that precedes the Fall. Arner also re-coups Calvin's doctrine of natural law. He believes Calvin's theology has something significant to contribute to the evolutionary study of morality. But the accusation that de Waal has misread Calvin may not make much difference to de Waal and to argue for an alternative based on Calvin is unlikely to be successful in convincing de Waal, even if it will be encouraging to some theologians.

Given his agnosticism regarding the internal lives of nonhuman animals, I am not surprised Arner questions the more experimental ideas I have elaborated, such as inter-morality. But a few issues need to be cleared up as part of this discussion. In the first place, inter-morality does not need to imply that there are no other ways of conceiving morality, or that human moral responsibility is simply a factor of that inter-moral state without remainder. Nor do I suggest that the closer the entanglements between humans and other creatures, the higher the moral status of those animal agents. So bacteria living symbiotically in the gut are not to be confused as having a similar

moral status to domesticated animals. Such creatures are still morally considerable. The gradations of moral sophistication I allow for do attempt to acknowledge differences between humans and other creatures according to degree, regardless of their respective intimacy with humans. But the point is to try and get away from comparative rhetoric and view the emergence of what eventually comes to be counted as moral judgments, like other complex phenomena, as an interacting *system*.

Treating other creatures and animals in particular as part of the same integral system with us means animals are less likely to become pure instruments for human pleasure. And we might even pause before deciding to eradicate our gut flora. In other words, it is more likely to make particular animals morally considerable. I fully admit this is not sufficient as an account of human morality; it is just one piece in the evolutionary narrative that I think is worth flagging up. How far and to what extent those other animals, including domesticates, might display characteristics that remind us of our own morality is relevant in as much as our own response to those others is likely to be shaped by our own perceptions of what is going on in their minds. It is only much later in human history that we have come to challenge our basic inclination to think of other animals as having intentions, which for centuries was presupposed.

Practical aspects of what this might look like are best worked out by moving on from a consideration of what morality looks like in general terms to much more specific instances of what it means to express particular forms of moral behavior, such as compassion, wisdom, empathy, or justice in complex inter-species communities. Yet here, I would concede, there is a mutuality of response. Compassion shown by humans towards animals reverberates towards behavior to other humans. We live in a multispecies commons, and contemporary detachment from that insight has blinded our sense of moral responsibility for those others.

Due consideration of the importance of other creatures for the development of human morality has its own religious history. Thomas Aquinas, for example, had no hesitation in this respect, and, like the author of Prov. 6:6–8, considered that the way of the ant did indeed bring insights into practical wisdom or prudence. So, in his discussion of sham prudence, he speaks of the vigilance of the ant that provides for humans an *imitandum* (literally, for us to imitate or follow as example; Aquinas 1973, q. 55, a. 7). While it is true Thomas still managed to hold to an instrumental view of other animals, his portrait of them as capable of teaching something important to humans about how to live a moral life is significant, since it reinforces the possibility of something like inter-morality being supported by traditional sources.

Space does not permit a discussion of other examples of moral exemplarism in Thomas.

Finally, in commenting on patterns of dominance among macaques, Fuentes indicates that he is not prepared to name this as social justice. Theologically, the most realistic tradition that traces lines of continuity but also striking discontinuity is that of natural law. For that, an Aristotelian framing of what justice requires, such as the Thomistic one, is the most helpful, but a full discussion of that is outside the scope of this short response (for a fuller discussion, see Deane-Drummond 2015b). I do agree, with Fuentes, that exploring specific elements of what morality is about is much more fruitful. Perhaps that marks another case for an attempt, at least, to discuss the evolution of wisdom as we do in this journal issue.

8. Some Concluding Remarks

Our mutual discussion has shown up many aspects of debates on the evolution of morality that have commonly been taken for granted. While our views diverge in some respects and we have rather different starting points and philosophical commitments, we agree on some basic points. Both Arner and Deane-Drummond agree that human reason is important for human morality, and both acknowledge the significance of both philosophy and theology for interrogating current debates on the evolution of morality. Both also believe theological interpretations of the natural world as creation are important and have been neglected. And both believe theology has something to contribute to the discussion, though in different ways. All of us agree a study of the evolution of morality is muddled in the literature and moving forward it would be better to separate elements of what such morality entails and investigate those. All three of us affirm the significance of detailed and careful observations of hominin remains and other animals, and all of us believe in the distinctiveness of human morality. We also agree that the motivational aspects of morality are important. We differ, however, in the extent to which ethological studies might give insights into other social animal minds, the motivational intentions of those animals, and the extent to which that is meaningful for a discussion of human morality. Deane-Drummond and Fuentes argue that morality, like other aspects of human behavior, needs to be situated in a broader understanding of evolutionary theory as a community niche construction. Broader definitions of morality are more inclusive but less incisive philosophically, since the breadth of meaning lacks clarity about scale, scope, and universality. All three of

us acknowledge the importance of wisdom, though, like morality, we are aware that even in this case its definitional basis is one that is bound to lead to further debate and discussion in both secular and religious contexts. Our collective discussion has, therefore, uncovered new questions as well as arriving at some preliminary shared conclusions.

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Jonathan Marks

A Tale of Ex-Apes

Whence Wisdom?

Evolution leaves two patterns in nature simultaneously: continuity (i. e., descent) and discontinuity (i. e., modification). In narrating the evolution of our species, we tend to privilege continuity at the expense of discontinuity, for reasons having in part to do with our historical engagement with creationist interlocutors, and to the cultural status ascribed to genetics. In this paper, I will explore the emergence of the imaginary – the universe of metaphors, possible futures, symbolic meanings, remote ancestors, spirits, magic, and most importantly, stories – as a crucial element in human evolution. The emergence of wisdom might be considered as the ability to navigate successfully in a largely fictive domain of relatedness, obligation, and morality.

1. Introduction

Let me begin with the title, *A Tale of Ex-Apes*¹. This is about the role of anthropologists as the custodians of a sacred origin narrative – at least that is what we would call it in any other culture – the authoritative scientific story of who we are and where we came from. Obviously, ours is not just a flight of fancy; ours is constrained by data. But the data are points; they are dots, and, of course, the dots come from somewhere and have to be connected to one another. And it is that narrative element to the scientific origin story to which I refer. Storytelling is not an appendage to human evolution. It *is* human evolution, and it is, to the extent that anything can be said to be, human nature (Landau 1993; Gottschall 2012). So this paper is not about the foot of *Australopithecus sediba* or the supraorbital torus of *Homo erectus*; this is about who we are and where we came from. This is about origin myths;

1 Many of the ideas presented here were formulated during my year as a Templeton fellow at the Notre Dame Institute for Advanced Study and are developed more fully in my book, *Tales of the Ex-Apes* (Marks 2015). I thank Celia Deane-Drummond and Agustín Fuentes for the invitation to participate in the conference on *The Evolution of Wisdom*, during which this paper was originally presented, and to the other participants and reviewers for their comments.

this is about kinship and how people conceptualize themselves in relation to one another and in relation to some kind of natural order. And, in particular, how we do it scientifically.

2. A Very Basic Statement

What does it mean to say that species A evolved into species B? We find A, and we find B, and they look similar, and A lived before B, so we say that A evolved into B. And that might be true. But, of course, we do not discover ancestor-descendant relationships; those relationships are always inferred. What we mean is that species A, or something very much like it, evolved into species B. After all, it is also possible that A went extinct without descendants, and that the actual ancestor of B was a still-unknown, close relative of A. This gets to a classic rhetorical scientific issue: weighing precision versus accuracy. “This species evolved into that species” is a precise statement that may or may not be accurate. Species B came from something, and it had to be something rather like A. But the statement that it *was* A tells you that we willingly choose a well-delineated but possibly fictive ancestor over a blurry real ancestor. This is, indeed, familiar to students of kinship.

From the standpoint of the science itself, to value precision over accuracy can be rhetorically valuable for making an estimate sound like a better answer than it actually is, but because it goes against the scientific norm of privileging accuracy over other variables, it is potentially embarrassing. If you pick up a genetics textbook from before 1956, for example, you’ll discover the factoid that human cells have forty-eight chromosomes (e.g., Boyd and Asimov 1955). The reason is that the most prominent cytogeneticist of the previous generation had said forty-eight was the number he thought was there, after essentially counting the strands of a bowl of pasta under the microscope. For nearly three decades, the accurate answer – a number in the high forties – was spurned in favor of forty-eight, which might have turned out to be true, but, unfortunately, it did not, for humans have forty-six chromosomes (Kottler 1974).

“Species A evolved into species B” is a story with a narrative arc, beginning with A and ending with B, and it leaves two reciprocal patterns: continuity and discontinuity. That is to say, regardless of whether nature makes leaps – a point Thomas Huxley and Charles Darwin disagreed on – the trail of descent is a continuous one, for every organism has two parents. The discontinuities emerge from divergences in form, ecological adaptation, mate recognition systems, or genomic structure, and allow us to identify A and B



Figure 1. Title page of the first German edition of Ernst Haeckel's *Natürliche Schöpfungsgeschichte* (1868), later published in English as *The History of Creation*, without this illustration (courtesy of the Max Planck Institute for the History of Science, Berlin).

as different in the first place. Darwin called it “descent with modification” (Darwin 1859, 420).

The discontinuities between species were not contested in the mid-nineteenth century. In earlier ages, when the Great Chain of Being was the dominant model of nature, there might have been some disagreement over whether everything intergrades into everything else or not (Lovejoy 1936), but since the late eighteenth century the taxonomists, led by Carl Linnaeus, were giving every species its own pigeonhole. By the mid-nineteenth century, naturalists took the discreteness of species for granted. What the early Darwinians were faced with was establishing the continuity between species, particularly between humans and everything else.

The problem lay in trying to convince European readers that they were descended from apes, in the absence of a fossil record attesting to it. Ernst Haeckel solved this rhetorical problem in his 1868 exposition of Darwinism, *Natürliche Schöpfungsgeschichte* (Figure 1). Haeckel makes the point at the

very beginning, in the frontispiece, and he shows the reader that we do not need a fossil record because the continuity between Europeans and apes is provided by the living non-European peoples of the world.

Now we know that origin narratives carry political weight. We know that archaeology is routinely utilized in the service of nationalism (Abu El-Haj 2001), and politics is in deep history as well (Schmalzer 2008). The politics here is interesting: Haeckel sought to convince non-evolutionists of the truth of Darwinism. To the end, then, of bashing creationism, he created continuity between human and ape where there in fact was none and dehumanized most of the peoples of the world in the process. He thus incurred a debt that serious students of human evolution will be paying off forever: to be responsible stewards of the sacred narrative, or, in less relativistic terms, to maintain an engagement with ethical and humanistic issues while we engage with the science of human evolution.

3. Identity and Ancestry

Since that first generation of Darwinians, many spokespeople for evolution have continued to find greater scientific value in the continuities of human and ape than in the discontinuities. That value is the same as it ever was, rhetorical and instrumental. Another way of imposing continuity is to redraw the playing field, so that instead of linking us to the apes, we declare ourselves to be apes. Maybe gussied up a bit, maybe naked (Morris 1967), but we are apes of some sort. That is our identity; that is what we are – apes. Take that, creationists! And this, says geneticist Jerry Coyne, is an “indisputable fact” (Coyne 2009, 192). Yet, it is a fact that is hard to reconcile to George Gaylord Simpson’s pronouncement, “It is not a fact that man is an ape, extra tricks or no” (Simpson 1949, 283). Simpson was a meticulous writer, so when he tells you this nearly monosyllabically, it means he thinks it’s important.

Simpson is actually echoing a sentiment of the biologist Julian Huxley, who ridiculed the idea that we are apes as a representation of the ‘nothing-but’ school: “[T]hose, for instance, who on realizing that man is descended from a primitive ancestor, say that he is only a developed monkey” (Huxley and Huxley 1947, 20). Julian Huxley had a celebrated grandfather, but he knew that your identity, what you are, is more than what your ancestors were. My ancestors were peasants, but if you call me a peasant on that basis, I would take some umbrage. My more remote ancestors were slaves. Some people’s more recent ancestors were slaves, and if you call us slaves on that

basis, we could probably at least both agree that it would be a bio-political statement, hardly a value-neutral fact of biology. Then we would move on, after you apologized.

And thus we enter the realm of bio-politics very quickly. We are not reducible to our ancestries, are we? Huxley and Simpson certainly did not think so. In fact, revolutions were fought over that very point; the idea that you are just your ancestry is the folk-biological bedrock of the politics of hereditary aristocracy. This is not to say that the geneticist is a royalist or oppressor of the masses, but it is to point out that the simple scientific statement that we are apes is loaded with value and articulates a non-empirical assumption that who we are is reducible to what our ancestors were, which we reject in other contexts. Why on earth should we accept it in this one? Perhaps we can answer that question by raising another question, namely “*Cui bono?*” or who gains by reducing identity (what we are) to ancestry (what we were), apart, of course, from the aristocrats?

It turns out that genetics has always been much better at detecting ancestry than at detecting novelty. Simpson and Huxley knew that. Indeed, we have known for many decades that, for example, the bloods of human and chimpanzee are more similar to one another than are the bloods of horse and donkey, which nevertheless are capable of hybridization (Hussey 1926). Our blood, it seemed, was effectively ape blood, but nobody called us apes on that basis because they regarded the intimacy of the bloods to be interesting but not transcendent.

We evolved from apes, to be sure, but we became different from them (Simpson 1963). That is to say, we evolved. In fact, if you think of evolution as Darwin and Simpson did, as descent with modification, then to call us apes is to deny evolution. It is descent without modification. Human evolution incorporates a great deal of modification – physically, ecologically, behaviorally – but not very much genetically. That is why we can use genetic change as a sort of clock, precisely because it does record, in any readily retrievable way, the physical, ecological, and behavioral changes that make us not-apes (Sarich and Wilson 1967; King and Wilson 1975; Li and Graur 1990).

Biochemist Emile Zuckerkandl showed decades ago that the structure of human hemoglobin and gorilla hemoglobin differed from one another only minimally, but he drew a myopic conclusion: “[F]rom the point of view of hemoglobin,” he argued, “gorilla is just an abnormal human, or man an abnormal gorilla, and the two species form actually one continuous population” (Zuckerkandl 1963, 247). But cannot any reasonably observant person still distinguish a human from a gorilla quite readily? The paleontologist

George Gaylord Simpson, who effectively embodied normative evolutionary biology in the mid-twentieth century (Gould 1981), responded by challenging the point of view of hemoglobin, which fails to distinguish humans from gorillas: “From any point of view other than that properly specified, that is of course nonsense. What the comparison really seems to indicate is that ... hemoglobin is a bad choice and has nothing to tell us about affinities, or indeed tells us a lie” (Simpson 1964, 1535). In other words, if you cannot tell the human from the ape, then you probably should not be a biologist. Here is a hint: The human is probably the one walking and talking, and the ape is probably the one sleeping naked in trees and flinging its poo (Cuppy 1931; Marks 2002).

Now let me make it clear, nobody likes apes more than I do. This is not about whether I am better than them; it is whether I am one of them, or whether I am different from them. Genetics shows the similarity of human and ape particularly well. What changed was not a discovery that we are apes but the normative value placed on genetic data in the late twentieth century, which show that genetically we are apes. Ecologically, anatomically, and behaviorally, we are still quite different from apes. Indeed, one could say we actually *became* apes with the popular genetic reductionism that accompanied the Human Genome Project a couple of decades ago.

So, who benefits by reducing identity to ancestry, besides the aristocrats? The geneticists. We privilege their data and narrative without even thinking about it, as if that were science, as if it were a fact of nature, when it is actually a fact of nature / culture (Goodman, Heath, and Lindee 2003).

There is another way one could argue that we are apes: phylogenetically. Chimps being closer to us than they are to orangutans, a relationship that is most readily demonstrable genetically (e.g., Hooton 1946, 45), we fall naturally in the midst of a group of living species constituted by the word ‘apes.’ So, in that sense, we may be apes. But in parallel with that argument, we can observe that coelacanths are closer to us than they are to tuna, but we don’t draw the conclusion on that basis that we are fish (Figure 2). Of course, there are interesting things to be learned by acknowledging our fish ancestry, such as why we gestate in an aqueous saline environment (Shubin 2009). But even though we fall phylogenetically within a group of species constituted by the word ‘fish,’ we do not say that we are fish. That would be ridiculous². We say,

2 Some radical biologists, indeed, do say this in the apparently sincere but misguided belief that declaring us to be fish will somehow make creationists more sympathetic to science. They do this by redefining ‘fish’ to include the sarcopterygians *as well as* their tetrapod descendants. At the very least, this affords more evidence that “we are fish” is not a fact of nature, but a contested and historically constructed fact.

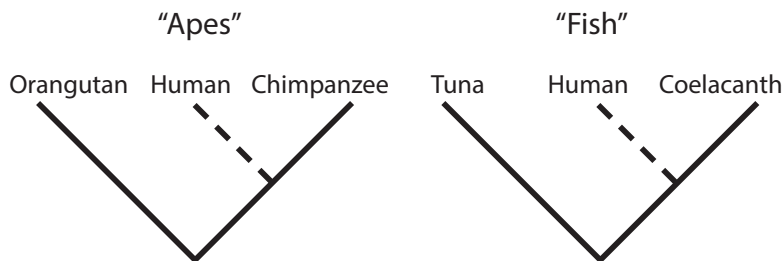


Figure 2. The phylogenetic placement of humans within 'apes' directly parallels the placement of humans within 'fish,' but in both cases our ancestors diverged from ancestral forms.

rather, that our sarcopterygian ancestors diverged from the fish and evolved into land-dwelling, air-breathing tetrapods. We are not fish; we are ex-fish.

Likewise, our more recent ancestors diverged from the apes and evolved into walking, talking people. What are we? We are not apes, as our ancestors were. We are ex-apes. That is evolution. Calling us apes, like calling us fish, is not a profound fact about our natures. It is just a superficial consequence of the way those colloquial groups are composed and constructed (Yoon 2009). Indeed, by the strictly phylogenetic criterion, we would be not only apes and fish, but monkeys and prosimians as well. To make us monkeys in Figure 2, simply replace the orangutan on the left with 'capuchin monkey' and the chimpanzee on the right with 'vervet monkey'. To make us prosimians, insert 'ring-tailed lemur' on the left and 'Philippine tarsier' on the right. None of these is a phylogenetic category, and transforming them into phylogenetic categories defeats the purpose of classification, since it would make us into apes, monkeys, prosimians, and fish simultaneously³.

The statement that we are apes, then, because our ancestors were apes, may be a fact, but it is certainly disputable; it is not manifestly true, and it is not a necessary implication of evolution. It is a historically produced fact, the result of choosing to privilege genetic knowledge and phylogenetic relationships over other kinds of scientific knowledge and relationships. Genetically, we are apes. Nearly any other way, we are ex-apes. It is not really about what we are, but about what scientific data we use to tell the story of what we are. "We are apes" articulates not a fact of nature, but a fact of nature/culture.

3 Other categories, such as Mammalia and Primates, do indeed designate phylogenetic units, at least for their extant representatives, and consequently one can legitimately say that we are primates and mammals.

4. The Imaginary

Clearly there is a lot more here than just data. It is a story, and an important story; it is the story of who we are and where we came from. To a far greater extent than other species, we create the environment with which we interact; that is to say, we are ex-apes who have a zoologically unique manner of living. We construct our environments in two ways: first, in the material realm of survival and reproduction, that of tools, fire, and clothing; and second, by creating an imaginary – but nevertheless real – world of rules, names, and stories. Both of these enabled our ancestors to level environmental variation by creating their environment, in large measure, and bringing it with them.

The invention of the imaginary – the world of stories, symbols, metaphors, images, and obligations, possible futures and pasts, remote ancestors, spirits, witches, luck, faith, and hope – is not the product of a rational mind. I do not mean to say that it is irrational, like crazy or stupid, but it is non-rational. It does not readily connect to the material, natural universe. It is not directly related to acquiring the necessities of life, or to reproducing. Its relationship to the Darwinian world is entirely indirect. It is make-believe. It does not exist, at least in ordinary domains of perception, but it is significantly real and understanding the nature of that reality is crucial to understanding the meaning of the science.

But there is a paradox at the heart of our scientific enterprise. We seek to analyze the evolution of an imaginary domain. Science, however, is only good with physical realities, not with imaginary realities. Symbols are interpreted, meanings are ascribed, and their analysis is necessarily hermeneutic, not scientific. Yet, they are what the human mind produces, and not, as far as we can tell, what the ape's mind produces. The evolution of this imaginary world of meaningful arbitrary associations and invented rules represents effectively the emergence of the human condition. I am suggesting that wisdom arises from the evolution of the symbolic and imaginary, reflecting the entry to a zoologically unexplored universe of possibility, temporality, and morality. That is to say, it represents the evolution of the ability to conceive and discuss what might be, what will be, and what ought to be. Zoologically speaking, this is a new and unfamiliar universe of knowledge.

Biological anthropology has made two major breakthroughs in the last couple of centuries. First, in the nineteenth century, we discovered that we are descended from apes (Huxley 1863). Second, in the twentieth century, we discovered that race and human variation are different things (Montagu 1942). If you study one, you are not studying the other. The human gene pool is not structured racially, and racial differences are far and away political

and economic, not biological in nature (Marks 1995). But we often hear geneticists say that race is not real, because they cannot find it (Graves 2003; Bliss 2012). The fact that human races are not real genetically only implies that they are not real if genetic, or biological, reality is the only reality there is. But, if that were true, it would mean that social inequality and political injustice do not exist, for they are not real, for they are *not* facts of nature, or biology, or genetics. This is an important point and it is about ontology, the nature of reality: Is nature, biology, genetics the only reality there is, or is the historically produced and culturally imagined at least as real as the natural, in which case political inequality might be real, and worthy of our attention? (You'll see, it is going to be bio-politics all the way down.)

I will argue that this real world of the social / historical / imaginary, which anthropologists came to call 'culture,' is our evolutionary specialization, which is a normative position in anthropology. The argument that chimpanzees or other species are cultural arises from removing the imaginary from culture and replacing it with learned behavior, which is more readily compared, and which of course permits you to see continuity if that is what you are looking for, because learned behavior exists quite widely in the animal kingdom (e. g., Whitehead and Rendell 2014). This is the ethologist's use of 'culture,' and it is the source of some considerable semantic confusion. The point, though, is that even in the single word 'culture' there are two concurrent uses: one emphasizing continuity with other species and one emphasizing discontinuity. It is a notable irony of this literature that eventually the reductive biologists who overemphasize the continuity between animal behavior and human behavior by calling them both 'culture' still have to come up with a noun to label human behavior. So they call it 'euculture' (Lumsden and Wilson 1981), or 'cumulative culture' (Boyd and Richerson 1996), or eventually just plain old 'culture' again (Pagel 2012).

So, it is perceived as more scientific to focus on (1) the continuity with the apes rather than on our distinctiveness, and (2) the mental states that relate to the immediate material world, rather than on the ones that relate to the imagined or metaphorical. Consequently, we study intelligence, which we conceptualize and test as rational, problem-solving capabilities. Chimpanzees are good at problem-solving, which means they have intelligence, though not as much as we have, but some (Tomasello 2014). But while we think of chimpanzees as intelligent, for we can measure and compare it and establish continuity, we do not think of chimps as possessing wisdom or enlightenment. These are attained states reflecting insight and contemplation, not necessarily by the best problem-solvers or test-takers, and discontinuous from the apes. So, we do not do much with it scientifically.

We think of chimpanzees as clever or intelligent; they are very good at some things, like solving a problem by taking something and sticking it into something else. They do it for termites and ants, for hunting galagos, and they do it in other contexts (Pruetz and Bertolani 2007). Why don't they go beyond that? Two reasons: They have small, weak brains and small, weak thumbs. We acknowledge our intellects co-evolved with technology, but, of course, so did our manual anatomy. That is to say, minds, tools, and hands co-evolved, although the mental, the technological, and the organic are phenomenologically distinct domains. (The mind is only scantily visible in the fossil record of the cranium.) Moreover, codes of conduct did not develop in a vacuum, and presumably co-evolved with technology, as the potential to kill at a distance (by projectiles, traps, or poisons) necessitated the development of a system to regulate that behavior (Pickering 2013). This is no longer the domain of biological evolution; this is the domain of biocultural evolution, and it is not reducible to biology without missing what is particularly human about human evolution.

The shorthand we use to describe human cognition is 'symbolic thought' (Deacon 1997) and that generally incorporates four broad mental processes (Hauser 2009). Our minds work *hierarchically*, by breaking down the chaos of the world into a smaller number of features – this is a kind of that. We do not know the extent to which, if at all, chimpanzees do this, but it is crucial to us, and, of course, we do it in locally specific ways. Our minds work *metaphorically*, making imaginary connections among things that have no physical connection. We point by age six months, although there is no physical connection between the tip of our finger and the object of our attention; this is why your cat looks at your fingertip instead of at the thing you are pointing to. (Dogs have been bred to be especially sensitive to human stimuli; chimpanzees are a bit more like cats in that regard.) We think *creatively*, juxtaposing disconnected things but illuminating both through the meanings we assign to the metaphorical connections we have made. Finally, we think *abstractly* about things that do not exist or might exist, but different from the world of the here and now, the perceptible. The point is that this is a world of unreality, of inherently meaningless sounds and acts and connections not directly related to eating and breeding, which are rendered meaningful by virtue of shared conventions of understanding, and which guide our lives. To be a successful human involves mastering this world.

But symbolic thought is not intelligence; indeed, one can argue that symbolic thought is the very opposite of intelligence. If we think of intelligence as rational thought, then the imaginary quality of symbolic thought seems profoundly irrational. This leads to an important conclusion about the

evolution of human thought: We do not know whether the human brain evolved for rationality (i. e., problem solving) or irrationality (i. e., imaginary associations among things). Our brains do both quite well. Since problem-solving is continuous from apes to people, this condition presumably is not a characteristic of a specifically human mind, but is rather a faculty that is more strongly developed in humans. Symbolic thought is where we seem to observe the discontinuity, the qualitative difference in function, which emerges from the threefold increase in brain volume over the course of the last three million years. The product of that organic change was the novel ability to produce imaginary connections between things that are not connected. The most obvious is the connection between the tip of your index finger and that thing over there you are pointing at. We do the opposite as well, disconnecting things mentally that may be naturally connected (such as relatives from non-relatives, when, in fact, we are all related).

Symbolic thought is at least as old as the oldest depictions of the human form. The crucial thing about symbols, though, is that they are not amenable to scientific analysis; one interprets symbols. They are not scientific objects, but hermeneutic objects, and, consequently, once again, not reducible to the purely biological without absurd results. In a recent popular science book (Pagel 2012), a biologist casually explains the Venus of Willendorf as if it were a photographic image from the Upper Paleolithic (Figure 3). The subject, we are told, has *steatopygia*, the large buttocks found in some indigenous women of southern Africa, and a woman who could attain a shape like that “would have been a walking advertisement for her ability to acquire food and to provide for her children.” And this fat storage system is “exquisitely fine tuned” (Pagel 2012, 261–62). Nevertheless, the statuette has shriven, spindly arms and no face, which might militate against taking it photographically, and instead might suggest that it should be understood culturally, symbolically, imaginatively. But the background issue here constitutes an epistemological paradox: How can we think scientifically about something that is fundamentally not a scientific subject – art?

The other aspect of this carving that is worth noting, because it is also invisible to us in the paleontological record since it is physiological, not osteological, is her head. Head hair in humans is a notably biocultural object. It requires constant tending, and it is uniquely human; apes do not have to worry about it. But humans do because if they do not, it overgrows their sensory apparatus, which would be patently maladaptive. Head hair had to co-evolve with the ability and interest in taking care of it. It serves no other purpose; apes get along nicely without it. Here, at the very dawn of the human image in the Stone Age, we see the hair carefully braided and tended



Figure 3. “Venus von Willendorf 01” by User: Matthias Kabel – Own work. Licensed under CC BY 2.5 via Commons – https://commons.wikimedia.org/wiki/File:Venus_von_Willendorf_01.jpg

(or perhaps even neatly tucked under a cap). That is pretty much all we see about the head. Hair communicates social information symbolically about its bearer and always has. What this suggests is that we are dealing with familiar minds, making statements about who we are through our personal grooming habits, and directing our viewers’ attention, both on our bodies and on representations of our bodies, to the features we want them to think are important.

This is not a photographic image; it is a caricature, which distorts reality by emphasizing features of interest and ignoring features not of interest, like the face. Likewise, the early carvings of lion-headed men are probably not to be taken literally either. They blur categorical distinctions, indicating an imaginary relationship between person and animal, which suggests not just the ability to depict a form, but a non-existent form, which in turn is constitutive of the particularly human imaginary world. (This makes a bit more sense than the possibility of roaming Upper Paleolithic were-cats.)

And so, the imaginary co-evolved with the tangible or material and with the organic. That is a lot of co-evolution, and to focus on the organic alone is to miss most of the story of human evolution. Indeed, the most fundamental

aspects of human nature – walking and talking – are fundamentally both instinctive and learned in their local instantiations. This is basically what I mean when I say we are bio-cultural ex-apes. To reduce human evolution to its recoverable biological features is to miss that the cultural permeates the biological and cannot be scraped off or peeled away.

Moreover, the emergence of the human is the emergence of the universe of the imaginary and metaphorical, which is itself paradoxically impermeable to the scientific method, precisely because it is not real and is not utilitarian. But it is meaningful, and to the extent that understanding who we are and where we come from involves the production of meaning, and that we are trying to be scientists about this, we have to be able to see our own scientific knowledge reflexively as a system of culturally inflected bio-political scientific data. Of course, the work in human variation shows that nicely. As there are political interests intimately involved in the production of scientific data on human diversity, there are simply more variables to consider in evaluating the scientific merits and scholarly value of any particular body of research.

5. Anthropological Taxonomies

Paying attention to the production of scientific knowledge is not limited to human diversity. We may ask a simple taxonomic question like: How many species of primates are there? In the classic texts from thirty years ago or so, you would get a number around 170 (Richard 1985; Smuts et al. 1987). In the authoritative works of the modern age, there are over 400 (Campbell et al. 2011; Strier 2016). That is a lot of speciating. As these newer books explain, this is about conservation. Dividing up the primates reinforces legislation intended to protect them in the wild. And there is no necessary reason why these units of conservation should map onto whatever units we were tabulating thirty years ago. For me, this says that primate species are not units of nature, but units of nature/culture, the results of complex negotiations between biological information and political, symbolic, meaningful information, but also no less real for being co-constituted by the natural and the cultural. Indeed, as partly units of political action, one could argue that modern primate species are more real than the more abstract primate species of a generation or two ago.

But if living primate species are not properly understood as units of nature, how can we possibly understand extinct primate species as units of nature? A recent bestseller by a historian starts off with the casual statement

that 100,000 years ago there were at least six species of humans (Harari 2014). Now, that might be a true statement. The problem is that we have no way of knowing. His presumptive taxa at the 100,000-year horizon are *Homo sapiens*, *H. neanderthalensis*, *H. erectus*, *H. soloensis*, *H. floresiensis*, and *H. denisova*. Suffice it to say that the introductory text I teach from gives no more than four lineages, and if you asked a roomful of biological anthropologists how many human species were alive 100,000 years ago, few would answer “six,” and of those, even fewer would specify these particular possible six.

Clearly the paleoanthropological species is not an unproblematic fact of nature. Nationalism, funding, ego, and prejudices of various kinds all go into the construction of these facts. While *Homo soloensis* denotes a small group of fossils with particular anatomies, as a unit of nature – as a species in our ancestry – it has roughly the same ontological status as Mother Corn Spirit. *Homo soloensis* is a marker for a part of the narrative of human origins, and it labels part of a network of human populations connected over space and time; it is a zoological metaphor, certainly not a ‘real’ species in any familiar sense of the word. Nor is this anything new. Back in his monograph on mammalian classification, Simpson found the taxonomy of the human line so frustrating that he wondered, tongue in cheek, whether it would not be better for the “zoological taxonomist” to forget the whole thing, and set the human family apart and “exclude its nomenclature and classification from ... studies” (Simpson 1945, 1988). Simpson, however, lacked the theoretical apparatus and interest in describing the nature of the problem. The assumption that we are dealing with facts of nature here is false; we are dealing with facts of nature / culture, the units of our origin myth are of a different sort than the units of paleo-horses or salamanders.

We commonly talk about lumping and splitting in paleoanthropological systematics, dividing our colleagues into those who attribute anatomical variation to factors such as sex, age, and microevolution (i.e., lumping the fossil record into a single lineage), and those who interpret anatomical variation largely taxonomically (i.e., splitting the fossil record into many distinct lineages). But this makes it sound more capricious than it really is, for lumping and splitting are instrumental, not ignorant, acts. Most importantly, they create different narratives about human evolution (Figure 4). The lumper story is one of the continuity and survival of the lineage; the splitter story is one of diversity and extinction of different lineages. These are rather different scientific stories to be told from the same empirical database. Once again, this turns on the hermeneutics of science, not the empirics of science. Moreover, the lumper story is principally one of microevolution, and the

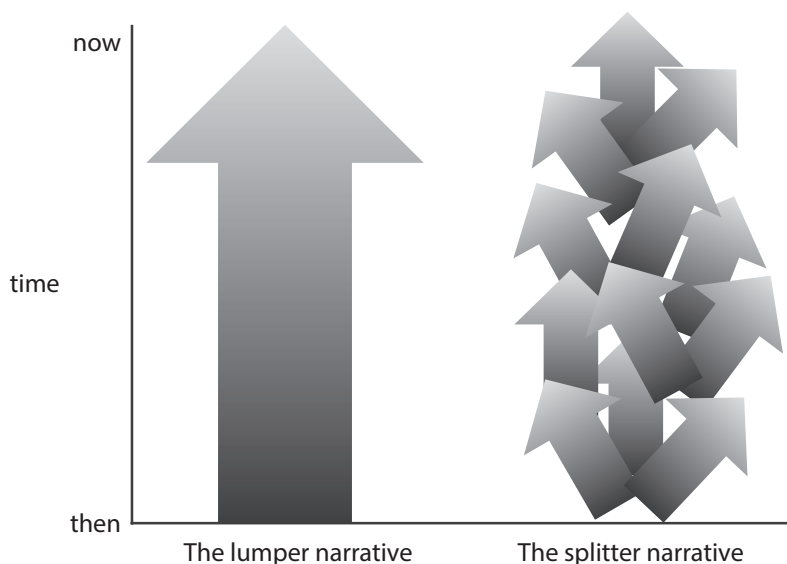


Figure 4. Lumping and splitting the fossils in our lineage produces different narratives of our ancestry.

splitter story is principally one of macroevolution. But if our use of the term ‘species’ here really is under-determined by the nature of the fossil record itself, and we cannot empirically distinguish between these two narratives, then we have to appreciate that this is where macro- and microevolution intergrade into one another, and human diversity and human ancestry become parts of the same story.

Of course, human diversity has its own set of narratives to identify and confront, especially about the power and transcendence of heredity. When James Watson infamously told *Time Magazine* in 1989 that “our fate is in our genes” as a way to drum up public funding for the nascent Human Genome Project (Jaroff 1989), he was articulating an old bio-political narrative about the transcendence of heredity for the purposes of self-interest. Nearly a century earlier, in the first English textbook of Mendelian genetics, the eponymous Reginald C. Punnett, now known to biology undergraduates for the ‘Punnett Square,’ left his reader with this parting thought:

Permanent progress is a question of breeding rather than of pedagogics; as our knowledge of heredity clears, and the mists of superstition are dispelled, there grows upon us with ever-increasing and relentless force the conviction that the creature is not made but born (Punnett 1905, 60).

Once again, this is not an empirical fact, but a bio-political fact, familiar to us not through well controlled genetic experiments, but through stories like the cryptic Hebrew ancestry of Moses and the upper-class pluck of Oliver Twist who both ultimately come to prevail over the course of their lives as an Egyptian and slum rat, respectively. Genetic ideology and genetic science, as we noted earlier, go hand in hand.

The very act of determining our elementary units of biological analysis creates divergent narratives, and since different species do have distinct hard-wired attributes, ideological narratives of human microevolution and macroevolution can converge. To one late-surviving scientific racist, a botanical geneticist named Reginald Ruggles Gates, the interbreeding criterion, which sufficiently impressed most contemporary scholars as to place all living humans in a single species, did not impress him (Gates 1948). Plants, which were his frame of reference, are quite profligate outside the recognized boundaries of species, so he had no difficulty in seeing humans as constituting multiple species. Human micro- and macroevolution are parts of the same bio-political story.

6. The Invisible Aspects of Human Evolution

Humans interact with the material universe in a unique way, seeing it as raw material and asking the question no other species asks (or can ask) about the special relation between organism and surroundings: What can I do with the stuff around here to transform the universe I inhabit (material, social, emotional) into the universe I want to inhabit? This is a complicated thought, involving social cooperation, technology, and niche construction, mediated by knowledge from the past and a vision of an imaginary future. The most significant conclusion about human evolution is the relationship between existence and the imaginary. *Human evolution increasingly involves the ability to imagine things into existence*, from marriage to political inequality. The survival skills of other species lie in navigating and manipulating the world of the material and the tangible, of other animals and other things, and that requires intelligence. But to rely on imaginary things for your survival and proliferation is zoologically unique. Wisdom, then, would be the ability to navigate and manipulate these non-existent things and relations.

The venue by which we share this imaginary life is language. We like to think language provided a means of communicating useful information efficiently, which of course it did. In fact, it was so good that we often remember it selectively, being a uniquely complex mode of communication, yet

leaving no direct fossil trail, and we forget how it compromised us in various ways. First, it apparently required a lot more brain than a chimpanzee has to master it, thus throwing the brain and the maternal pelvis out of synch. Second, it reduced canine teeth (you cannot speak intelligibly through large interlocking canine teeth, after all), replaced the defensive role of teeth with tools, and replaced threat displays with actual threats. Third, it lowered the position of the larynx relative to an ape's, making it easier for us to choke. Fourth, it co-opted an ape's primary means of heat dissipation, namely panting, creating a heat loss problem, which our ancestors solved by developing a system of evaporative cooling (sweating), which apes lack and which only works efficiently with a dramatic reduction in body hair.

Language, however, efficiently communicates non-information or misleading information, as well as useful information. Chimpanzees, for example, form transient coalitions or alliances to achieve certain social ends. They effectively communicate their willingness to cooperate behaviorally, for example, by grooming one another. Indeed, they navigate a social maze that we understand only weakly at best. But they do not have to deal with three chimpanzees who say in turn, "I'm your friend, trust me." "No, I'm your friend, trust me." "No, you can't trust either of them; I'm your real friend." That is a problem chimpanzees do not face, but speaking creatures do.

Our ancestors, I wish to suggest, solved this problem in two ways: first, with sharper thought processes, allowing them to wrestle with the possible consequences of each option rationally, if still fallibly; and second, with kinship, that is, an imaginary network of reciprocal obligations that allows you to know immediately, without having met the person, what you can expect from them and what they can expect from you. In the last few hundred years, that kind of information has been supplanted by other kinds of cultural information, for example, nationality, or religion, or neighborhood, or *alma mater*, that feed us shorthand knowledge of how akin we feel to someone else. In remote times, our ancestors gauged how akin they felt toward someone by literally establishing them as kin – so-and-so's spouse, descendant, clan or tribe, fifth cousin, in-laws, and bearing so-and-so's name.

Importantly, none of these is necessarily a natural status. We might both be descendants of the same ancestral eagle, after all. Tribal membership is notoriously flexible; even though it may mean the difference between life and death, a binary assignment invariably misrepresents the natural relations among neighboring groups who trade and intermarry. A fifth cousin is a negligible biological relationship. To put it in perspective, two first cousins have a 12.5 % chance of both receiving the same allele from the same common ancestor (hence the recognition of cousin marriage as a risk factor for

some genetic diseases). The corresponding probability for a fifth cousin is 0.05 %, about 250 times smaller, and for all intents and purposes, zero. Nothing is significantly natural about a fifth cousin, except perhaps to a genealogist. Of course, in-laws are established by agreement and biologically united through the bodies of offspring. Since apes do not have names, being a namesake is meaningless to them – naming is a distinctively human practice, and subject to local rules.

As far as we know, associating a body with an arbitrary combination of sounds (as opposed to simply memorizing the association they have already been given) is a uniquely human act. Even the Bronze Age authors of *Genesis* were impressed by this when they made naming Adam's first act; our symbolic communication is always there in the background. Of course, names are not part of the real world; they are fictions of the human collectivity. To survive as a human, you need to know what's what and who's who, and the way we do it is by the reciprocal processes of naming (i. e., individual identification) and grouping (i. e., classification). To the extent that other species do this, it is rudimentary and unfamiliar; to humans, it is the way we begin to make the world around us.

Our ancestors began to rely on adapting by constructing their own niches technologically, notably with fire and clothing, and by thinking symbolically and communicating vocally (Fuentes 2010). All this mental work necessitated bigger brains, whose growth outpaced the pelvic canal. Childbirth became consequently more difficult in humans than in apes, parturition itself could not regularly occur with the mother squatting silently, alone, as in apes. Generally somebody else has to be around. Moreover, the offspring would mature more slowly; while a human gets wisdom teeth at age twenty or so, a chimpanzee has had them since age eleven. An eleven-year-old chimpanzee is fully mature; an eleven-year-old human is still clinging to the apron strings. Mother needs assistance, both at the time of labor and thereafter (Hrdy 2009). Where is it going to come from? One source is her own mother, with the development of menopause, in which a human female may live for decades after ceasing to be fertile, in contrast to chimpanzees, who effectively breed until they die. Another source is in development of marriage, by which I refer to a system of reciprocal obligations and expectations that bind two people, and more significantly, their families, together.

We should note three things about marriage. First, it is not pair-bonding. This is an agreement, not an instinct. This is important because it takes two parties to have an agreement, but only one to have an instinct. The agreement involves mutual understandings, social networks and statuses, economic obligations, and possible future generations; there is little of 'nature'

that is strictly comparable (i. e., homologous) to the social bonds of nonhuman primates here.

Second, whatever its primordial form, marriage immediately creates three social roles that chimpanzees lack: father, spouse, and in-law. Although in this model the origin of marriage lies in the relationship between the families of a man and a woman, nevertheless, marriage comes to serve many different roles and functions in society, and emphasizing different ones is what creates the diversity of marriage forms we observe ethnographically and historically (Coontz 2006). Origin and present function may be difficult to relate to one another. Moreover, we still have the grandmother, who stands as a perpetual rival for the attentions of her daughter. Over a century ago, James Frazer wrote that “the awe and dread with which the untutored savage regards his mother-in-law are amongst the most familiar facts of anthropology” (Frazer 1900, 2:288), and we have just explained it in evolutionary terms, although quite different from the Victorian evolutionary theories Frazer worked with (Stocking 1995). In-laws are also significant in undermining the naïve idea that humans are generally autonomous actors in the choice of mates like other primates are. Among the primates, the attribute of being “someone my parents will like” much less “someone my parents chose” does not exist outside the human species, and impairs the possibility of generalizing about human mate choice from other species.

Third, marriage is imaginary. It is not necessary for the survival and proliferation of other forms of life, and some of the early speculations about human origins involved trying to imagine what human life without marriage would have been like. (Modern anthropologists do not restrict their use of the term to heterosexual monogamy, but rather use it to encompass the many ways in which families are ritually created and legitimized in human societies.) Once again, it is the invention of the imaginary that is constitutively human: imaginary obligations, imaginary relationships, imaginary futures. A bright chimpanzee has to deal effectively with other chimpanzees; a wise human must deal effectively with fathers, mothers-in-law, teachers, traders, sworn enemies, distant relatives, dead ancestors, unborn descendants, ghostly apparitions, and gods.

While all this new socializing is going on, we still have those slow-developing children (Konner 2011). In most primate species, one sex or the other transfers at maturity. In chimpanzees it is usually females; in baboons, it is usually males, in some species both. Slow growing and slow maturing, humans are at least as immature socially as they are sexually. Unlike the apes, we now have opposite sex siblings going through puberty together and remaining in contact for life. If you have got that going on, by golly, you had

better regulate their sexual conduct (Chapais 2008). In other words, sibling-ship is a genetic relationship that becomes a social relationship in human evolution. Thus, we have rule-governed behavior (Fortes 1983), the imaginary world of rules, coming to bracket off a certain class of attractive, fertile people as simply not valid partners; once you have bracketed off one group as not valid sexual partners, you have a template for other kinds of non-sexual, opposite-sex relationships – spirit guides, healers, colleagues, friends.

Moreover, this sets up an interesting symbolic contrast between the two emergent relationships of sibling and spouse (Barnard 2011). One represents your old family; the other, your new family. One is a normatively non-sexual relationship; the other is a normatively sexual relationship. One is a fact of birth; the other is a fact of law or mutually understood obligations. Consequently, one relationship can only be terminated by death, while there are generally ways of getting out of the other. Opposite-sex siblings are connected through their joint ancestors, while opposite-sex spouses are connected through their joint descendants.

In the family we have the origins of obligations, rule-governed behavior, and the transcendence of death, since the relationships that constitute your family, your relatives, and your lineage were there before you were born, and will be there after you die. This is the knowledge of living within the human imaginary universe, knowledge that is of no use or meaning to a chimpanzee, and perhaps, I have suggested, where the evolutionary seeds of wisdom lie. What is important in discussing emergent human social relations is that they are not organic properties, meaning the important stuff in human evolution here is not going on *within* human brains, but *between* human brains. And, of course, they create natural realities while not themselves being natural properties. Modern race theorists talk about embodiment (Krieger 2005; Gravlee 2009) and the ways racism (i. e., political inequality) subtly affects the human organism; indeed, we continue to imagine things into existence.

7. Conclusion

I have tried to develop three general themes here. The first is the narrative component of our special scientific endeavor, highlighting the often-misleading scientific narratives that emphasize continuity at the expense of discontinuity. The second is how acknowledging the cultural aspects of our science permits us to identify its bio-political elements as well, distinguishing the science of our nature and origin from other kinds of science. The third is that the signal adaptation of the human condition involved the invention

of the imaginary – the rules, values, obligations, taboos, dreams, possibilities, metaphors, remote ancestors, and invisible connections between things that structure our lives – and whose physical unreality constitutes a paradox at the heart of our scientific ambition to understand human evolution, the story of how we became ex-apes.

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Play It Again, but This Time with Ontological Conviction

A Response to Jonathan Marks

Jonathan Marks invites us to swim against the tide of much contemporary evolutionary theory. If many prominent evolutionary narratives have emphasized continuity and descent, he wants to remind us of discontinuity and modification. If they have found in genetics and hard science the key to understanding human beings, he seeks to complement these with an acknowledgement of human historical and cultural identity. If they have restricted reality to the realm of the material and utilitarian, he aspires to extend it to include the imaginary and the non-rational. Which is to say that, to at least some of us who are not evolutionary biologists or anthropologists, his writing comes as a breath of fresh air, certainly when compared with the stifling intellectual constraints that appear to bedevil all too much of the discussion.

Let me begin by picking out what seem to me some of the most valuable aspects of his paper. The first of these is his emphasis that we are not our ancestors: However, we are to understand and account for the difference between human beings and apes, the story of mere continuity, that we are simply apes, is unsustainable, for the reasons he gives and others. That human beings are not apes is at first sight trivially true, of course, but it has profound implications that will not be comprehended until we have first owned the trivial truth – or so I will suggest. Again, his appreciation of the bio-political nature of the assertion that genetically we are apes is well placed. Human beings are indeed biocultural creatures in whom the cultural and the biological are inextricably entangled: Culture is not an accidental feature which can be unpeeled to reveal the essential biological reality underneath. We are always already cultural beings: rational animals, in Aristotle's terms, who are not first vegetative and then animal before subsequently becoming rational, but are characterized by rational souls from the very outset.

Marks also rightly insists that we cannot separate questions of ethics from the scientific questions when thinking about evolution. Science is a human practice, and therefore must be governed by the norms appropriate

to human action, including moral and political norms. Indeed, we might extend this to say that ethics cannot be a bolt-on activity, something which is subcontracted to hand-wringing ethics committees or commentators on the ethical, legal, and social dimensions of scientific research, as too often happens when one's fundamental conceptuality has been formed in a post-Enlightenment matrix. Somehow ethics has to be integral to the fundamental structuring and orientation of the scientific enterprise itself.

There are many other enjoyable and insightful things in his paper, but I will pick out only one, namely his argument that marriage is not just pair-bonding. Marriage, as he affirms, is an agreement, not an instinct. It involves many characteristically human features, not least of which is the activity of promising, a social practice which is intrinsically intentional, intrinsically social, and intrinsically oriented to the future. Indeed, the image of the transmutation of the sheer biological facticity of the pair-bonding instinct into the personal reality of the mutual vows of permanent, faithful love neatly captures what I want to press on him. For many of his instincts seem to me well-judged and leaning in the right direction, but they have not yet wholly embraced the wider and deeper grounding they need if they are to be fully intelligible. In the same way as he properly wants us to recognize the reality of the symbolic, but still talks in a potentially misleading way about the invention of the symbolic, so I shall suggest that we need to talk of the *advent* of the symbolic as a realm which fulfills human beings and somehow precedes their imaginings.

Let me start, first, with an observation about creationism. One reason for resorting to precision at the expense of accuracy in making certain claims within evolutionary biology was, Marks says, in order to 'bash' creationism. Ernst Haeckel's notorious evolutionary racism, which portrayed some human races as more advanced and further removed from the apes than others, was in part motivated by such a goal, with disastrous results. Yet, this aim, we might note, effectively lets creationists dictate the scientific agenda, and indeed creationism in one form or another has haunted the imaginary of evolutionary biology ever since the latter's inception. This forms a startling contrast with its role in theology. For creation science is largely ignored in most mainstream contemporary theology, which is much more interested in what the doctrine of creation says theologically about the world and the place of human beings in it than in specious apologetic claims based on alleged gaps in evolutionary explanation. Creationism seems to be given much more air time in discussions in biology than it ever is in theology: Indeed, for many theologians probably the only time they encounter it is when they are reading in evolutionary biology. The reason it is rejected in theology is

not primarily because it is bad science, but because it is bad theology: In particular, it tends to assume a competitive relation between divine action and natural secondary causation, such that God and nature are taken to be alternative possible explanations of events, thereby denying the immediate dependence of all creation on the Creator for the gift of its existence.

We might ask, therefore, why, if creationism is largely ignored by theologians, it has been given so much time in biology? Why is so much energy consumed in combatting so apparently soft a target? Here the answer might not be as straightforward as one might imagine. Of course, there are the immediate political pressures: the need to defend the teaching of evolution in schools, or to sustain the continuing public credibility of science, for example. But one wonders if behind the attack on creation science there lies another, unspoken anxiety. For something in creationism threatens the metaphysical naturalism that is the routinely assumed philosophical stance of mainstream evolutionary biology and anthropology. Even if from a theological perspective one might suspect creation science of tacitly sustaining such a naturalism by diminishing the role of God into that of the purveyor of supernatural irruptions into the natural order, it might also be that by referring the existence of things to something beyond themselves, it hints at fundamental philosophical difference. That is, by refusing to regard the world as ultimately self-sustaining or self-explanatory, creationism suggests that philosophical materialism is explanatorily inadequate, and that a much more rewarding – and truthfully, more interesting – terrain needs to be opened up.

To see what this might be we should consider, second, Marks' reflections on human beings as 'ex-apes.' He affirms entirely correctly that we are not apes, that the discontinuities with our evolutionary ancestors are as important as the continuities, that origin narratives (including scientific ones) are not value-neutral, that an emphasis on genetic identity privileges certain kinds of social interests at the expense of others, and so on: All this is well-taken and seems – at least to this outsider – long overdue. Those who say that we are just apes, might equally say that we are just fish; but, as he notes, we are not fish, but ex-fish. But, we might also ask, why should we stop at calling ourselves apes or fish? If we extend the reductive logic backwards, we might as well describe ourselves as just pond slime, or just inorganic matter, or, indeed, just matter. And that reveals the metaphysical heart of the logic: for there is no such thing as 'matter' as such, since matter is always formed; that is, matter is always the matter of some thing. The reductive logic is implicitly nihilistic in aspiration: It essentially tends to the devaluing of human beings, with moral and political consequences, which in the long term are likely to be disastrous.

It is a bit hard on pond slime as well. It is not only that pond slime in all its varieties is a marvel at the molecular and cellular level, which of course it is. Rather, the consequence of devaluing human beings by reducing us to our ancestry is that we devalue everything else as well – as if pond slime is a bad thing to be. In theological terms, the reductive move is fundamentally gnostic in nature, a claim that matter is worthless and intrinsically bad. Instead of the debasing of matter, theology celebrates the elevation of all things, from sub-atomic particles to the most complex creatures in the universe.

This allows human beings to be what they are, and not something else: In fact, it frees all things to be what they are, and not something else. In particular, it means that we do not have to obsess about human uniqueness or entertain existential anxieties about which features of human beings either singly or in combination render them categorically different from all other animals. Maybe humans are distinct from other animals or other *homo*-like species in certain ways. Maybe they are not. Maybe there is no single characteristic, which is uniquely human. Whatever the case is here, there are no grounds for ontological crisis about the status of human beings, for they are not consigned to the void if it turns out that there is nothing in virtue of which they are superior to all other creatures – any more than they are consigned to the void if there turn out to be extra-planetary creatures who are superior to them in every respect.

However, it does mean that we have to recognize the existence of something like natural kinds. To assert that it is possible to be human and not ape, even if human beings are descended from apes and so are ex-apes, requires a metaphysical commitment. That is, it requires that there be some feature or set of features which can in principle be picked out in virtue of which humans are humans and not apes. What these are may of course be open to investigation and revision, but they are not merely projections of arbitrary combinations of patterns onto a formless universe. This does not mean that we should straightforwardly identify natural kinds with biological species consisting of individuals with a shared evolutionary descent¹. But without some such ontological commitment, we lose any capacity to make distinctions between kinds, and without any such distinctions, not only are we not able to describe the modifications to which evolution gives rise, it is questionable whether we are able to articulate the evolutionary process itself. Without an A and B that are articulably different, we have no route from A to B, and so no possibility of evolution (Cunningham 2010, 236–37).

1 Thus E. Jonathan Lowe: “It seems to me perfectly conceivable that there should be cats on a planet orbiting Alpha Centauri: they would simply not be members of our cat species” (Lowe 2001, 187).

This bears, third, on Marks' discussion of the "invention of the imaginary" (159). One of the features of his use of the language of the 'invention' (or 'emergence' or 'creation') of the 'imaginary' (or the 'symbolic' or the 'cultural') is that the reader is left unclear in what sense the imaginary is real. So, we are told that human beings have created "an imaginary – but nevertheless real – world of rules, names, and stories." The imaginary is "make-believe. It does not exist, at least in ordinary domains of perception, but it is significantly real" (159). The domains of relatedness, obligation, and morality are "largely fictive," yet social inequality is "real" (152). And so on.

What are the reasons for this ambiguity? Let us be clear from the outset that he is completely right: There are kinds of reality which are not simply genetic or biological, and things which are historically produced and culturally imagined may nevertheless properly be described as real. And so political inequality (to take his example) is real and absolutely worthy of our attention. But we cannot assert the reality of these without some concomitant shifting of the metaphysical furniture. In particular, we need to avoid suggesting that the 'merely' physical managed to produce the mental (or the symbolic/imaginary/cultural) unless we also acknowledge the extraordinary ontological reversal of materialism intimated by the phenomenon of emergence (Pickstock 2007, 99–114). It is important to understand what is involved here. It is not only a matter of appreciating that one cannot 'invent' the imaginary without first having an imagination to do the inventing. Nor is it merely about an alleged but actually unexplained emergence of mind from brain – we need to acknowledge that even now, despite many decades of philosophical and scientific effort, we do not have any really convincing account of how a physical brain has managed to produce the phenomenon of consciousness, either across evolutionary time or in the development of any individual brain. Nor even is it that it is far from obvious how brains, which evolved to deal with life, death, and love in the savannah, would thereby be equipped to deal with theoretical physics.

The point is rather that the very categories themselves of truth, falsehood, logic, and reason, which are associated with advanced cognition, cannot be explained in terms of materialist conceptions of adaptive value alone. The category of truth presumes a kind of domain whose difference from the material realm begs to be described as ontological in nature: We live, as the philosophers say, in the space of reasons, and the practice of reason-giving is not the same as the practice of calculating adaptive benefit. This practice of reason-giving applies to science, of course, including evolutionary biology and anthropology, which are among the highest achievements of the human imagination: In the end, we believe their findings not because it is adaptive

to do so, but because, and to the extent that, we think they tell us the truth about their fields of enquiry. Any scientific theory about the nature of things, including the nature of human beings, must have assumptions consistent with its own possibility. And those assumptions must include the possibility of mind-independent truth (see Nagel 2012, 71–95).

It is not clear from his paper that Marks does share the naturalist reductionism or the materialism that lurks behind much standard-issue evolutionary theory. He certainly is aware that there are ontological issues at stake. But the ambiguities in his writing over the reality of the symbolic suggests that he has not yet fully weaned himself off certain assumptions about the ontological primacy of the physical, and that he has still to embrace wholeheartedly the implications of recognizing the reality of other realms than the biological or genetic.

Finally, we might draw out one exceptionally important political conclusion from these reflections. One of the underlying themes of Marks' paper concerns the number of species of human beings there have been. Here he refers to the eugenicist and scientific racist, Reginald Ruggles Gates (1882–1962), who maintained that there are multiple species of human beings. Against the consensus that the capacity for interbreeding indicated a single human species, Gates pointed to the capacity of many plants to breed beyond their established species boundaries, and deduced that there is no reason to refuse the same conclusion in relation to human beings. While I am not suggesting any reason to doubt that he is wrong, and we should flatly reject the political values of those racists who do reject the claim that all living human beings form one species, nevertheless, this line of reasoning does prompt an intriguing thought experiment. What if – counterfactually, let me repeat – human beings were discovered to be more than one species, even if they were highly overlapping species? Perhaps (without here pretending to be able to elaborate the biological claims that might make this thought experiment plausible) it might be discovered that certain interbreeding pairs of humans were producing offspring that were significantly less fertile than normal.

Needless to say, this would be a hugely difficult and controversial finding. And the conflict would not only be because in the process of ordinary scientific scrutiny some would no doubt question its scientific validity. Much more significantly, one element in the dispute would be that many people, both scientists and non-scientists, would understandably think that this could not be *allowed* to be the truth. It would be, as Marks says, bio-politics all the way down. The science would not be permitted to be the fearless search for truth wherever it might lead, but would in fact be constrained at

least to some extent by political pressures. But to the extent that these pressures were felt, it would suggest that in fact it is lucky that we have discovered human beings to be just one species.

Yet, those of us who believe that all human beings are of equal value naturally think that our commitment to human equality is not only a matter of luck, and rightly so. We take our belief in equality to be a fundamental moral commitment which is only contingently related to scientific findings, even when these turn out to be lucky ones which are congruent with our moral values. Our moral commitments, one might say, have ontological priority over our scientific findings, not in the sense that they dictate those findings, but in the sense that they are not dictated by them.

These reflections – about the reference of the world towards something beyond itself on which it depends, the elevation of all things and the need for ontological conviction, the rejection of the metaphysical primacy of the material, and the affirmation of the ontological primacy of truth and goodness – all point towards the need for what with some trepidation we might call metaphysical hierarchy. Together they suggest that we need to consider the possibility of an order of truth, beauty, and goodness which in some sense precedes and transcends the material order, which cannot be reduced to it and cannot be explained by it, whatever the views of contemporary science's most publicly visible self-interpreters². Of course, what the conditions of the possibility of such a transcendent order might be is another question. But if we turn to the broader theme of the evolution of wisdom, it implies that we need to understand human wisdom not as an evolved skill of an unusually complex kind, but as a reflection of the wisdom that pervades the universe itself.

I am not sure that Jonathan Marks needs to deny any of this. And so my suggestion to him would simply be: Play it again, but this time with feeling – or rather, this time with ontological conviction.

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On Narratives, Niches, and Religion

A Response to Jonathan Marks

There is much to celebrate in Jonathan Marks' stories about the stories that ex-apes tell. We are all grateful, first of all, for the vivid and accessible prose. How can you *not* love a paper that includes references to sex, *Oliver Twist*, and flinging poo? In my brief response, I promise to spare you my take on sex and Charles Dickens. I also will resist the impulse to fling poo. There is more than enough of that in academic circles. Instead, I will do more celebrating, since in these cross-disciplinary conversations sometimes we forget to say what we agree about. Then I will try to enhance our conversation by seeking more clarity about some central terms, including a term Marks uses (the 'imaginary') and one he does not ('religion').

First, let us continue the celebration – and surface some agreement. After suggesting that we should talk about ourselves as 'ex-apes,' Marks goes on to explore three primary themes. He suggests, first, that scientists reconstructing the distant past tell stories that amount to origin stories and that, second, those stories have "bio-political elements." Finally, Marks suggests that humans "create the environment" they interact with and that "the signal adaptation of the human condition" was the invention of what he calls the 'imaginary.' I agree with all that.

In fact, I would like to propose that we might have here two guiding presuppositions for the cross-disciplinary conversation among anthropologists, theologians, and historians. Perhaps we can agree about narratives and niches?

All of us who ponder the past tell origin stories, whether they are about the Revolution of 1776, the cognitive explosion, or the creation from nothing. Perhaps we can use one historian's definition to find agreement: "History," Jill Lepore has suggested, "is the art of making an argument about the past by telling a story accountable to evidence" (Lepore 2012, 14). So every story makes an argument and appeals to evidence, whether that means stones and bones or scripture and tradition. Taking a step beyond that definition, and rephrasing Marks' point, can we also agree that those arguments,

and the stories that give them form, also enact different values and yield different social consequences? Following some philosophers, I would suggest that the fact/value dichotomy makes no sense and that we all enact epistemic values (e.g., coherence), moral values (e.g., equity), and aesthetic values (e.g., vividness) as we tell and assess narratives (Putnam 2002). The question for our conversation, then, is *which* values do we affirm and enact? In my own writing, I have affirmed all sorts of values – equity, humility, complexity, empathy, and (as you can tell) clarity. Marks also identifies some disciplinary values – precision and accuracy – but I am not sure which value he prizes most highly? How about the theologians in this conversation? What is your highest value?

I also value sustainability – social and ecological – and that raises a second possible point of agreement among anthropologists, theologians, and historians: I wonder if we can agree to frame our work in terms of niche construction theory? Can we embrace and extend Marks' suggestion that humans create their environment and conceive of our disciplinary work and cross-disciplinary collaborations as multiple ways of analyzing the cultural habitats we inherit, construct, and transmit? Some biologists and anthropologists have advocated the utility of that frame, and I am using it for my current book project, a deep and broad history of religion, as I tell a story about how people have used figurative tools to build imagined worlds. As others have suggested (Deane-Drummond 2014, 219–22), I think niche construction theory might also be useful to some theologians, and not only those who care about ecological ethics. Maybe we then can go on to a more precise and vigorous discussion of the ways religious practices have been adaptive and maladaptive as the religious use figurative tools to create and 'crack' cultural habitats¹? So, my initial question: Can we agree about narratives and niches?

If so, can we widen that accord by using that other category I just introduced – *religion*? A few other scholars have begun to think about the implications of niche construction theory for the comparative study of religion (Bulbulia 2008; Purzycki and Sosis 2013). Yet, I realize that term might generate spirited discussion, while also helpfully highlighting our differences. Perhaps some of that clarifying I promised might allow us to discern what we agree about and what we do not. It might help as we get more precise

1 The authors of the classic monograph on niche construction noted that niches can be "destroyed" and introduced terms to describe how organisms "perturb" their environment ("inceptive niche construction"), as they also talked about "negative niche construction" or acts that "decrease the fitness of niche-constructing organisms" (Odling-Smee, Laland, and Feldman 2003, 1, 420). On 'cracked' niches, see also Odling-Smee, Laland, and Feldman 2000.

about the practices and artifacts that constitute what Marks calls the ‘imaginary.’ That is a fun and fanciful term, and I see its advantages, but I wonder if there is a way to make still more distinctions, since Marks crams a lot in that conceptual box. In one list of the features of the imaginary, he suggests it refers to “the world of stories, symbols, metaphors, images, and obligations, possible futures and pasts, remote ancestors, spirits, witches, luck, faith, and hope” (159). In another list he suggests it includes “the rules, values, obligations, taboos, dreams, possibilities, metaphors, remote ancestors” (172).

From my perspective as an historian of religion interested in cross-disciplinary conversations, I would say that he is referring to related but distinguishable cultural practices – art, technology, morality, etiquette, and, yes, religion. But how would we decide which, if any practices, are religious? Well, I have written a theory of religion, which emphasizes the kinetic intercausality of religion, biology, economy, society, and politics, but I will not lay out all that here (Tweed 2006, 54, 76)². Instead, perhaps just a few hints about my approach to the study of religion in the distant past might illumine our differences. I would ask first about the conditions for the emergence of religion – the biological developments, environmental factors, social forms, and cognitive and affective capacities – and then ask when we first find those in the archaeological record.

So, what is *religion* and what are the conditions for its emergence? As I understand it, religion situates devotees in time and space (Tweed 2006; see also 2011, 2014). It is transtemporal and translocative. It involves crossing and dwelling, or attempts to orient individuals and groups temporally and spatially (Tweed 2006, 54–79). Religious crossings can be terrestrial or aquatic and include foreign missions, holy wars, and pilgrimages as well as forced, coerced, or voluntary migration (123–63); but the religious also marks and crosses stages in the life cycle (‘embodied crossings’) and the boundary between this world and the next (‘cosmic crossings’). And religion is about dwelling: It orients individuals and groups in four chronotopes or space-times: the body, the home, the homeland, and the cosmos (80–122). Communities use ‘figurative tools’ – analogical language like metaphors, symbolic actions like burials, and resonant objects like images of mythic figures – to transform the local ecology and construct an imagined world (68). In this sense, religion is homemaking. It is about making a dwelling place or

2 Here is my definition: “Religions are confluences of organic-cultural flows that intensify joy and confront suffering by drawing on human and suprahuman forces to make homes and cross boundaries” (Tweed 2006, 54).

constructing a niche³. Humans' ecological-cultural niches are complex, and religion's figurative tools have done some of that work of clearing the ground and making a world. Religion is distinguished from the other practices that modify the environment by devotees' appeal to *suprahuman forces* (Marks' "remote ancestors, spirits, and witches") and by their imagining of an *ultimate horizon*, a threshold beyond this world and after the individual's death (Marks' "possibilities" and "possible futures"). So, I would say some of the things he talks about are religious – and we should say so.

Now, aren't things clearer? We've de-cluttered the 'imaginary' and distinguished the 'religious.' But I fear that some of you might think things are now even murkier. In any case, I hope we can agree about narratives and niches, and at least consider the possibility that 'religion' also might be a shared category for us. Anthropologists and theologians, I suspect, will have different reservations about the use of that category but might be united in their hesitation about jumping in the deep end of the 'religion' pool. If courage fails you, and you need a nudge, I would be happy to help, because we are not just talking about *sapientia* or symbols. It's religion.

Well, perhaps that annoying assertion will elicit the verbal poo-flinging-fest I had feared. If you feel that flinging urge rise up in you, however, I guess I could sheepishly put all the clutter back in the box, and just talk about the evolution of wisdom and the invention of the imaginary – but I wonder if we might not have a more generative discussion if we began not only by affirming our (mostly) shared convictions about narratives and niches but also by candidly considering the possible advantages of framing our cross-disciplinary discussion as converging and competing stories about the evolution of religion?

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The Impossible Is Made Possible

Edward Schillebeeckx, Symbolic Imagination, and Eschatological Faith

The human community niche is distinctively inflected by the human symbolic imagination, as particularized and maintained by the social group. This profoundly social form of symbolic imagination that characterizes human ways of being and knowing is central to human evolutionary history (Fuentes 2014, 243). The symbolic imagination allows human beings to step beyond the possible and believe in, act from, and experience the *impossible*. It allows for sensation of what is *not* present in material experience alone and ‘what if’ wonderings. It enables future planning and intensive coordinated social effort. Or, to use the words of Edward Schillebeeckx, it allows a community to “demand a future and open it up” (Schillebeeckx 1979, 622). This creates a condition of acute sensitivity to the negative; that is, humans are always living with an awareness of the gulf between what *is* and what *could* be or *should* be. Wise human communities have strategies or practices for enduring life in the negative. They are able to maintain an awareness of this gulf without it either overwhelming or underwhelming the imaginative faculty. More specifically, they have a symbolic framework that enables flourishing in the negative via the cultivation of hope. For Christians, this symbolic framework is eschatological faith.

1. Introduction

For biological anthropologists, the role of symbolic imagination in human action and sociality is primary in descriptions of the human social niche. Citing the human emotional experiences that accompany and make possible humor, fine art, and scientific discovery, many biological anthropologists recognize symbolic imagination as a salient component of human culture and, in particular, as having a particular role in the emergence of religion (Tattersall 1998; Deacon and Cashman 2009). Theologians can agree about the significance of the symbolic imagination in human life, particularly Catholic theologians operating from a sacramental worldview (e.g., Dulles 1980; Chauvet 1995), yet few have elected to dialogue with biological anthropologists on explicit terms. As an exception, J. Wentzel van Huyssteen has

emphasized the significance of imagination in the human niche as a condition for the possibility of religious awareness, though the conversation in his work remains at the level of the emergence of religion as a human phenomenon rather than proceeding to an examination of the content of religious belief and how the symbolic imagination shapes religious faith in specific ways (van Huyssteen 2006). As the dialogue between theology and biological anthropology has emphasized to this point, the human symbolic imagination is the source of theological traditions. Little work, however, has been done to relate biological anthropologists' descriptions of the human imagination to the ongoing development of these theological traditions. Scholars have yet to address the ways in which the human imagination generates particular challenges that theological traditions must face in order to promote semiotic flourishing. I will begin to address some of these potential points of contact in this article by turning to the theological writings of Edward Schillebeeckx as a resource. I turn to Schillebeeckx because he emphasizes that the eschatological character of Christian faith ensures a commitment to a kind of perpetually self-transcending imaginative vision of and implementation of the good that can never be satisfied by what human beings have already achieved. This way of framing eschatological faith highlights how human symbolic imagination poses both specific challenges to and opportunities for human flourishing. Religious traditions must navigate these challenges and opportunities in order to function as wisdom traditions. For humans, wisdom consists (at least in part) in a kind of "negative capability" (Keats 1899, 277; see also Unger 2004) to transcend in a continual fashion the limitations placed upon the symbolic imagination by cultivating a simultaneous permanent criticism of the *status quo* and a perpetual commitment to implementing – i. e., making possible – imagined (or 'impossible') goods.

When biological anthropological discussions of the human symbolic imagination are brought to the same table as theological discussions, both disciplines can agree upon the propensity of humans, in the creation and maintenance of the human niche, to think and to act imaginatively from that which extends beyond the clearly possible (Schillebeeckx 1968, 74; Deacon and Cashman 2009, 6; Fuentes 2015, 173). Human communities navigate the dangers that malaise and lethargy pose to perpetually self-transcending imagination in different ways. The Christian theological tradition offers an eschatological vision of the consummation of all creation through grace, foregrounding a dynamic form of human imagining. If human wisdom is a species-specific form of intelligence that emerges from our ability to function in a symbolic cultural niche (Kissel and Fuentes 2016, in this volume), then the Christian symbolic imagination (as distinctly inflected by

eschatological faith) is a particular instance of a broader human wisdom that can flourish when given positive grounds for hope and endurance.

The turn to eschatology that began in the mid-1960s within Christian European theology sets the stage for a particularly profitable conversation between theology and biological anthropology. During this time, ‘theologians of hope,’ such as Edward Schillebeeckx, Johannes Baptist Metz, Jürgen Moltmann, and Wolfhart Pannenberg, began to take seriously the concerns of modern atheism. They sought to rearticulate the relevance of Christian claims in a contemporary context that they identified as decidedly future-orientated. In this context, as Steven Rodenborn describes, a “renewed enthusiasm determined by the ongoing economic and material productivity of the sciences, as well as a progressive optimism in the possibility of sociopolitical transformation illustrated by the well-known student movements of 1968” seemed to construct a contrast between Christianity and the modern world (Rodenborn 2014, 9): Christians maintained faith in the agency of God, while the modern world placed its faith in human action and ingenuity. This disconnection between Christian faith and secular culture was thought to produce a crisis of faith for the modern Christian, provoking her to declare her allegiance to either the secular or the religious order. Rejecting this zero-sum relationship between Christianity and secularism, the theologians of hope have suggested that the modern impulse to privilege the future and prioritize human creativity is derived from the Christian eschatological tradition (Rodenborn 2014, 15–16; see also Löwith 1949). They argued that it is a distortion of this eschatological tradition that causes the modern Christian to become indifferent to the unfolding of history and to reserve her attention to an otherworldly future alone. A more faithful adherence to the tradition of Christian eschatological thought, however, confirms the modern secular emphasis placed on scientific discovery and sociopolitical transformation by simultaneously *encouraging* human participation in the work of ameliorating suffering in the world while also *relativizing* any satisfaction one might have with what human beings have already accomplished. Thus, a revitalization of Christian eschatological faith has an important role to play in not only facilitating constructive cooperation between Christians and secular humanists but also in correcting some destructive ideological distortions of modern Christianity. As a result, the ‘theologies of hope,’ popularized at the height of zero-sum attitudes toward Christianity and secularization, are particularly fertile grounds for engagement with contemporary scientific descriptions of human being. Of these theologians, Edward Schillebeeckx’s thought is particularly rich for this kind of dialogue because he is careful to insist that eschatological transformation does not negate the

enduring significance of history and he foregrounds human agency as non-competitive with divine agency. His non-apocalyptic eschatological theology, particularly to the extent that it rests upon a strong theology of creation, creates the potential for evolutionary history to function as a positive source for theology¹.

In this essay, I will explore Schillebeeckx's articulation of the Christian message for the world – "humanity is possible!" (Schillebeeckx 1968, 193)² – as a starting place for biological anthropology and Christian theology to foreground the role of imagination in human wisdom. I will begin with a discussion of the potential space for scientific insights in theological thought and then proceed to a synthesis of anthropological discussions of the human social niche as inclusive of both obligate interdependence and symbolic cognition (see, especially, Fuentes 2014). When these two characteristics are viewed together, we can understand human beings as possessing a particularly social form of symbolic imagination. I argue that symbolic imagination provides the conditions for the possibility of what Schillebeeckx calls 'negative contrast experiences.' These experiences are supported by a nearly universal (though vague) sense of human well-being, which he identifies as the 'impossible' made *possible* only in the eschatological promise of salvation.

In the anthropological literature I reference in this essay, the 'impossible' is that which necessitates the involvement of human imagination to understand or experience. The 'impossible' does not suggest that which is paranormal or is in any way rare for humans. In fact, a high frequency of interaction with the impossible in ordinary human life is precisely the point some anthropologists make: We are overdesigned to interact with the material world through the symbolic imagination (Deacon 1997; Deacon and Cashman 2009). In contrast, the 'impossible' for Schillebeeckx refers to that which we cannot accomplish without divine grace. This is clearly a different meaning than that suggested in anthropological literature, but it is (perhaps unexpectedly) related. I use the same term 'impossible' when discussing the literature in both disciplinary fields in order to explicate this relationship. For Schillebeeckx, humans desire full flourishing but cannot accomplish it

1 Schillebeeckx criticized both Metz and Moltmann for failing to preserve continuity between history and the eschatological future. For a critique of Metz, see Schillebeeckx 1980a, 150n78. For Schillebeeckx's critique of Moltmann, see Schillebeeckx 1974, 7–8.

2 As I will describe in more detail later in this essay, the proclamation "humanity is possible!" refers to Schillebeeckx's argument that God's promise of salvation makes possible the flourishing of humanity. This formulation is characteristic of the 'grace-optimism' that Mary Catherine Hilbert argues pervades Schillebeeckx's entire corpus (Hilbert 1991).

through their own efforts³. We have epistemological access (i. e., a kind of experiential access) to the impossible (recall: full human flourishing) in and through the symbolic imagination. Negative contrast experiences empower humans to participate in making possible the impossible, but in the end full human flourishing retains its impossibility. This does *not* mean that flourishing cannot be actualized, but merely that it cannot be actualized without the assistance of God's transformative grace.

To the extent that I restrict my analysis to an in-depth examination of one theological position rather than survey a diversity of human religious behaviors and beliefs, I illuminate the dynamic between the possible and the impossible internal to the Christian tradition (and one strand within the Christian tradition, at that). This serves two functions: (a) to illuminate, for a theological readership, how Christian eschatological faith cultivates a perpetually self-transcending mode of symbolic imagining and, thereby, aims toward human wisdom; (b) to offer, for a non-theological readership, an example of how one community negotiates the tensive relationship between dissatisfaction and commitment that human symbolic imagination often can create. More work needs to be done to explore the specific and diverse ways humans in other contexts negotiate the dangers posed to the symbolic imagination. In particular, how do other human communities maintain an openness to a dissonance between what *is* and what one imagines *could* be or *should* be without becoming crushed by the longing implicit in imaginative desire? In other words, how can one remain creative and active on the basis of this imaginative vision?

2. Science as a Valid Source for Theological Reflection

The thought of Catholic theologian, Edward Schillebeeckx, is particularly rich for dialogue with scientific accounts of human nature because he operates within a “non-dualistic ontological framework” (Rodenborn 2014, 79). This framework is the condition for the possibility of, among other things, a non-apocalyptic eschatology in which God does not operate by means of intervention into history. A non-apocalyptic eschatology understands the

3 For Schillebeeckx, the fullness of human flourishing is represented conceptually by the *humanum*, the eschatologically transformed human being. Though we do not know what full human flourishing is in a precise way, we know dialectically what it is not. Schillebeeckx names seven ‘anthropological constants’ as co-ordinating this dialectical knowledge including bodily, interpersonal, social-institutional, and spiritual forms of well-being (Schillebeeckx 1980b, 734–46).

history of human activity as animated by God's grace to mediate salvation. As Schillebeeckx writes, "The Spirit of God does not work as a stopgap, but in and through man himself" (Schillebeeckx 1968, 149). Consequently, for Schillebeeckx, an examination of the history of human experience is an integral component of theological reflection (Webster 1984; Hilkert 2002). As John Webster describes, Schillebeeckx's theology is permeated by an "understanding of revelation as that which is experienced within history rather than as that which lies outside of history" (Webster 1984, 5). Although one can gather from Schillebeeckx's writings that he was sympathetic to theological engagement with the sciences (see, e.g., Schillebeeckx [1966] 1971, [2005] 2014), he did not engage in this dialogue himself with any depth. As a result, we can amend and particularize his claim that history is the arena in which revelation operates to include, specifically, evolutionary history.

Riffing upon the traditional Christian maxim "no salvation outside the church," originating with the third-century bishop Cyprian of Carthage, Schillebeeckx posits "no salvation outside the world" (Schillebeeckx 1990, 12)⁴. With this formulation, Schillebeeckx emphasizes that the secular is the realm of God's saving action. This represents a deeply incarnational approach that recognizes a distinction between God and creation, but rejects any competition between creation and divine creator, as well as any dualism between material and spiritual realities. As a result of this non-competition, Schillebeeckx can claim that God need not (and does not) halt or alter the laws of nature in order to act in history (Schillebeeckx 1968, 207n18) and, as a result of this non-dualism, he can claim that the material world mediates and expresses the reality of God. This is not to suggest that all that exists is holy and good, for certainly some human realities are unjust and therefore do not mediate God positively, but for Schillebeeckx, even evil situations communicate something of the reality of God insofar as God is present in absence. Belief in God, therefore, cannot and should not act as a resistance to openness to the insights of human science. Instead, the insights of science reveal something of the way that God expresses Godself in history (180). Even further, eschatological fulfillment of the created material world (including humanity), though brought about by God, does not

4 Robert Schreiter argues that while Schillebeeckx's emphasis on inductive reasoning and human experience as a starting point for theology makes his work "widely read and appreciated" in the contemporary context of secularization, some others may mistrust his approach (Schreiter 2002, 194). This may be because, as Schreiter describes, "induction, experience and concrete narrative were not long ago suspect, and even absent from Catholic theology. Schillebeeckx, more than any other Catholic theologian, has through his work made them foundational to how theology is done today" (194).

happen without the free participation of humans in history (Schillebeeckx 1988, 71). The eschatological transformation, for which we await, does not discard the world as it is and replace it with a radically new world; instead, this world, this history that we experience now is brought to fulfillment as something truly new, but also continuous with what is (Schillebeeckx 1974, 11–12). In other words, God's eschatological grace is mediated by history and history is symbolic of God for humanity (i. e., history reveals God to humanity, if only dialectically)⁵. These claims position any insight gleaned about humanity, from biological anthropology or elsewhere, as ripe for theological reflection because humans have the task of bringing about salvation through their own resources as graced by God (Schillebeeckx 1968, 185). This is not to claim that human beings are capable of self-redemption, but rather that through the autonomy of creation, maintained by God, humanity has been graced with the resources to mediate eschatological transformation of the world. With this encouragement from Schillebeeckx, then, let us turn to recent research about the significance of the symbolic imagination in the human niche in order to reflect on the ways this imagination impacts human flourishing and eschatological salvation.

3. Symbolic Imagination as Characteristic of the Human Niche

Evolutionary anthropologists describe humans as having created a niche unlike other species. The 'niche' is an intentionally broad term referring to an "evolutionary meta-system that encompasses positive feedback systems at individual, subgroup, and community levels, demographic processes, and local ecologies" (Deane-Drummond and Fuentes 2014, 252). A niche is both spatial and social. A niche refers to the behaviors of a group, including shared skills, beliefs, and patterns of relationship and learning. The distinctively human niche can be described by two related characteristics: obligate interdependence and symbolic thinking. Together these produce complex forms of sociality. As Celia Deane-Drummond and Agustín Fuentes describe,

Community members share cognitive, social, and ecological bonds even in the absence of close spatial proximity through symbol, language, memory, hopes and shared beliefs. The advent of symbolic and metaphorical ways of thinking about the world, and eventually religious belief, brings the possibility of a shared religious life that would further cement these bonds (255–56).

5 This symbolic understanding of material reality can affirm both that the historical is real and yet also leave open space for a critique of reality and the necessity for future transformation. This methodological starting point is critical for a dialogue between theology and the sciences.

In other words, the interdependence that characterizes human communities is not simply a material interdependence, but also a semiotic interdependence. We need to think together. We need to believe together. We need to construct meaning together. Human biological flourishing involves semiotic flourishing.

‘Obligate interdependence’ refers to the reality that humans are biologically and culturally adapted for emotional and material forms of interdependence (Caporael and Brewer 1995). Humans live in communities that depend upon “multiple and diverse social relationships, dense information sharing, and high degrees of cooperation” (Fuentes 2014, 244). For example, humans have an extended childhood that allows for the possibility of gradual transfer of complex forms of learning and opportunities for apprenticeship from elders. Large social networks are required to nurture and educate human children and to pass along cumulatively acquired cultural knowledge (Hrdy 2009; Sterelny 2012). So, to facilitate these cooperative forms of breeding and apprenticeship, humans have developed finely sharpened abilities to “perceive what others know, intend, and desire” (Hrdy 2009, 10). These make us inclined to enter into and sustain complex, cooperative enterprises. In other words, complex bonds of interconnection provide the conditions for the possibility of humans becoming who they are.

One of the ways humans participate collaboratively in shared goals and intentions is through the creation and use of social symbols. Some anthropologists argue that symbolic cognition is a distinctively human characteristic that is significant for the maintenance of human communities (Deacon 1997; Tomasello et al. 2005)⁶. Here, ‘symbolic’ refers to signs that are able to maintain signification even in the absence of a proximate reference (Deacon 1997, 82). Symbolic reference, then, allows for the possibility that objects and actions can communicate more meaning than can be derived from their material substance and immediate context alone. As Terrence Deacon and Tyrone Cashman argue, symbolic cognition allows for the possibility of juxtaposing ideas and emotions in conceptually imaginative ways beyond ‘normal experience’ such that this conceptual blend results in a *tertium quid* that is more than a mere combination of the original elements (Deacon and

6 Although others have argued that humans are a semiotic species and this symbolic capacity plays a major factor in human evolution (e.g., Donald 2001; King 2007; Barnard 2012), I rely upon Deacon because, as Kissel and Fuentes argue, Deacon’s own reliance on Peircean semiotics, especially insofar as Peirce’s system is not as language-driven as Saussure’s is, allows for a broad analysis of both human and non-human spheres (Kissel and Fuentes 2016). Specifically, Deacon makes clear the relationship of symbols to other signs: icons and indices.

Cashman 2009, 6). Therefore, the ‘symbolic’ emerges from the interrelationship of elements as constructed by the human imagination. The relational quality of symbols is even further reinforced by the reality that symbols, by definition, function within a semiotic network of meaning. Using human language as the paradigmatic instance of symbolic reference, Deacon argues that the structure of human language itself necessitates the conception of any word (i. e., any symbol) in relationship to all other words of a language. As a result, the symbolic power of words is generated from their combinations. He writes, “Symbolic reference derives from *combinatorial* possibilities and impossibilities, and we therefore depend on combinations both to discover it (during learning) and to make use of it (during communication)” (Deacon 1997, 83). Therefore, what links a symbol to its referent is not so much the co-occurrence of the symbol and an object (this is true of indices, not symbols), but rather the relationship of the symbol and the referent is determined by the relationships *between* symbols (Deacon 1997, 83; cf. Peirce [1897] 1955, 1978)⁷.

The human niche, then, is the inherited “landscape of perceptual reality wherein everything, material or not, is infused with multifaceted meaning” (Fuentes 2015, 173; cf. Deacon and Cashman 2009, 14–15). In other words, the human community niche is a terrain of social configurations, modes of cognition, skills, assumptions, bodies, and ecologies. This niche is distinctively inflected by the human symbolic imagination, as particularized and maintained by the social group. This profoundly social form of symbolic imagination that characterizes human ways of being and knowing is central to human evolutionary history (Fuentes 2014, 243). The symbolic imagination allows human beings to envision combinational possibilities that otherwise do not exist in ordinary experience. The symbolic imagination allows human beings to step beyond the possible and believe in, act from, and experience the *impossible*. It allows for sensation of what is *not* present in material experience alone and ‘what if’ wonderings. It enables future planning and intensive coordinated social effort. Or, to use the words of Schillebeeckx, it allows a community to “demand a future and open it up” (Schillebeeckx 1979, 622). This creates a condition of acute sensitivity to the negative; that is, humans are always living with an awareness of the gulf between what *is* and what *could* be or *should* be. How do humans navigate life in the negative? One could argue that healthy human communities have strategies or

7 This reality can be seen in the example of the symbolic object the wedding ring: A wedding ring symbolizes not a physical or spatial reality, but rather another social symbol – i. e., marriage itself is a symbolic relationship of its own that is only meaningful within a specific culture’s understanding of family.

practices for enduring life in the negative. They are able to maintain an awareness of this gulf without it either overwhelming or underwhelming the imaginative faculty. More specifically, they have a symbolic framework that enables flourishing in the negative via the cultivation of hope. For Christians, this symbolic framework is eschatological faith.

4. Edward Schillebeeckx's Eschatological Faith: Permanent (Im)possibility and Perpetually Self-Transcending Imagination

Edward Schillebeeckx can provide a theological framework for interpreting the interaction of human imagination and hope in human history as I have articulated so far in an evolutionary anthropological key. Schillebeeckx argues that experiences of suffering can have a practical-critical effect to encourage human beings to demand a different future when these experiences function as negative contrast experiences. These negative contrast experiences are, for Schillebeeckx, experiences of suffering as precisely that which ought not to be and they generate a spontaneous reaction of indignation. Underlying this instinctive response of indignation, Schillebeeckx argues, is an incipient hope and an intuitive knowledge of what should be and could be (Schillebeeckx 1968, 136). In other words, the fundamental human experience of a “no” to the world as it is” reveals a deeper, “unfulfilled ... ‘open yes’ [which] is the basis of that opposition and makes it possible” (Schillebeeckx 1990, 5, 6). Hope allows the sufferer to experience injustice in *contrast* to a (however vaguely felt) sense of human wholeness. A contemporary example of negative contrast experience as a communal impulse toward both indignation and hope in the United States can be seen in connection with the acquittal of George Zimmerman in the shooting death of unarmed Trayvon Martin in July 2013, and the failure to charge police officers in the shooting deaths of Michael Brown in Ferguson, Missouri and Eric Garner in New York City in 2014. Many within black communities across the United States experienced indignation at what appeared to be a comprehensive corruption of power and expressed anger as they asked, “Is my son next?” The activist social movement *Black Lives Matter* that has emerged from this collective refusal to accept the inevitability of systematic violence against black bodies is an expression of communal hope that police brutality is not inevitable and racial equality is possible⁸. Negative contrast experiences dialectically

8 The *Black Lives Matter* movement began as a response to these experiences of indignation and expresses both (a) the collective refusal of its participants as well as (b) the

function as a “coming to consciousness of a *desiderium*, a longing, and of a question about meaning ‘on its way’ and real human freedom, wholeness and happiness to come” (Schillebeeckx 1979, 622).

Schillebeeckx describes the longing for human good and well-being that underlies negative contrast experiences as common to human experience. Negative contrast experiences are “pre-religious,” “spontaneous,” and “pre-reflexive” (Schillebeeckx 1968, 136, 137). In other words, they are the naturally critical-prophetic impulses that arise in no particular way from Christian revelation but rather are fundamental to human experience. Negative contrast experiences are a “worldly prophecy” (153), a part of the secular experience of the whole of life, “our total experience of reality” (151). One need not be propelled by a specifically Christian faith commitment to experience the suffering of injustice as a negative contrast experience. In this way, then, it is appropriate (even according to Schillebeeckx’s own description) to ascribe this way of human knowing and being to symbolic cognition (as selected for through human evolutionary history). A specifically Christian eschatological faith interacts with the basic human experience of negative contrast to encourage endurance in the process of imagining and implementing future possible goods.

Though Schillebeeckx is careful to maintain that the knowledge negative contrast experiences produce is never positivistic, he is clear in his argument that negative contrast experiences do produce some kind of insight into the fullness of human life, some ‘wisdom’ concerning human good. This is a kind of *dialectical* wisdom that can spur us to imagine what *is* worthy of humanity, what human good *does* look like, to “demand a future and open it up” (Schillebeeckx 1979, 622) in a perpetually self-transcending fashion. These basic feelings of both protest and hope are a “preliminary stage” for further reflection (scientific, theological, moral, etc.) on what to do, what to create, and how to act on one’s intuitions (Schillebeeckx 1968, 154–55,

collective affirmation of their hope. As Alicia Graza, activist and co-founder of blacklivesmatter.com, writes, “Black Lives Matter is an ideological and political intervention in a world where Black lives are systematically and intentionally targets for demise. It is an affirmation of Black folks’ contributions to this society, our humanity, and our resilience in the face of deadly oppression” (blacklivesmatter.com). It is interesting to note that Graza’s formulation mirrors the way that Schillebeeckx frames the dual structure of negative contrast experiences. If the insertion of the *Black Lives Matter* movement as an example of negative contrast experience seems somewhat jarring here in an otherwise primarily theoretical essay, this is intentional. I mean to flag the ways Schillebeeckx’s concept of negative contrast experience is precisely an *experiential* matter. Negative contrast experiences evoke deep emotion, and it is difficult to demonstrate this without contemplation of a serious (and, often, unnerving) instance of unjust suffering.

see also 158–59). Negative contrast experiences act as a bridge between the world and reflexive human knowledge (154–55)⁹. By positing a “universal horizon of understanding” without a “positively defined understanding of reality,” Schillebeeckx constructs a kind of “nonessential negative metaphysics” (Rodenborn 2014, 175)¹⁰.

Schillebeeckx, thus, makes a claim that a primary character of human thinking is to view experiences as more than isolated events, and further, to understand experiences in light of a hidden system of “what should be” and “what should not be,” what is worthy of humanity, what is “livable” and what is not (Schillebeeckx 1980b, 731). If Terrence Deacon and others are correct about the significance of the symbolic imagination for the human niche, the way of thinking that Schillebeeckx describes is an especially human form of cognition, inflected by the symbolic imagination. In distinction from indexical reference, which is common to most animals and requires a physical, temporal, or causal link between a sign and its object, symbolic reference is stable even when the proximity of sign and object is not maintained. Symbols can function in the absence of a referent while indices and icons cannot (Deacon 1997, 82). For humans, the feeling of contrast that arises from negative experiences is possible because symbolic cognition allows for the stability of an intuition of the good (however partial or vague) in the absence of a proximate referent in the experience at hand. When human experience fails to conform to an imagined vision of human good, a perception of human good is not totally lost. Though it is not sensed in its totality, it still can exert a force in the broken present. Like Deacon and other cognitive anthropologists, Schillebeeckx affirms the human tendency to imagine that which is beyond the material experience at hand – both sensing the “invisible system[s] of connections” (Deacon and Cashman 2009, 13) between what “should be” and what “should not be” (or, alternatively phrased, what is a “livable” human existence and what is not; Schillebeeckx 1980b, 731), as well as imagining what could be and planning for that possible future. Pointing to the historical force of the human construct ‘utopia,’ Schillebeeckx argues that humankind “believes in what is humanly impossible” (Schillebeeckx 1968, 157–58). In other words, critique of the *status quo* through the articulation of a human social ideal (however impossible) stimulates creative action to

9 One should note that the second stage of reflection does not always go well, in other words, one can act incorrectly or even unjustly on a good intuition upon further reflection. One can opt to act violently, taking out one’s rage on others and making more victims of sin rather than acting creatively to dismantle structures of evil.

10 William Portier alternatively describes this as a “minimal, negative realistic metaphysics” (Portier 1984).

achieve more than would have been possible without the agitating force of the ideal vision.

For Schillebeeckx, then, a universal longing for the impossible and a hope that the impossible can be accomplished is to be found in the depths of human existence. Hope in the impossible (i. e., hope in an “unfulfilled open yes,” Schillebeeckx 1990, 6) animates the fundamental ‘no’ to the world as it is. This hope represents a “fundamental trust that the future has meaning on the basis of the unspoken assumption that being [hu]man – the impossible – is nonetheless possible” (Schillebeeckx 1968, 74). Religious believers, as Schillebeeckx puts it, “fill out the one two-sided basic experience” with a “more precise direction” (Schillebeeckx 1990, 6). For Christians, specifically, indignation, i. e., “the fundamental muttering of humanity[,] turns into a well-founded hope. Something of a sigh of mercy, of compassion, is hidden in the deepest depths of reality ... and in it believers hear the name of God” (6). Christian hope is uniquely inflected by faith in a promise of God who is present in absence, a God who approaches but who is ultimately still to come and who, upon arrival, promises the full flourishing of all of creation (Schillebeeckx 1968, 75).

Schillebeeckx’s emphasis on the ‘not yet’ character of salvation is influenced by a desire to create a space for genuine criticism of the status quo and hope for a future that is authentically new (not simply the extension of history as it has been) (Schillebeeckx 1968, 183). For Schillebeeckx, human experience is ambiguous: Positive experiences of meaning stand alongside negative experiences of suffering and disorientation. Comprehensive salvation, i. e., the transformation of human existence such that “there shall be no more death or mourning, wailing or pain” (Rev. 21:4), represents a future promise of well-being. This promise, granted to humanity by God and secured by God’s faithfulness, is yet accomplished through the graced resources of humanity itself. As Schillebeeckx writes,

[The Christian] knows that it [human flourishing, i. e., the ‘impossible,’ JF] has been promised to him and to the whole of mankind as a gratuitous grace, a gift which faith has inwardly to *make its own* and which must therefore begin to become a reality in our human history. The Christian knows that he receives the future to make it – he does not simply receive it as a ‘present’ that is given to him, but receives it to ‘make it’ himself, to bring it about (191–92, see also 193).

We do not know what the content of this promise is, i. e., the positive content of eschatological transformed humanity (the *humanum*). We may have partial indications of what human salvation consists of due to “partial experiences of meaning already undergone” (Schillebeeckx 1980b, 792). Yet, we mostly cannot express this vision of salvation in positive terms, and instead

must speak “negatively, in parables and visions” (792). Here Schillebeeckx relies upon Marxist influences, such as Ernst Bloch and Theodor Adorno’s constructions of negative dialectics, and creatively links this with a Christian mystical impulse. He writes,

[O]ur situation never allows us to define in positive terms what this will ultimately imply for human salvation, given the spiritual openness and the human ‘self-transcendence’ still to be realized in history and, moreover, in view of the absolute freedom of God as the ‘God of men,’ a God whose glory lies in human happiness. Any positive definition runs the risk of either becoming megalomaniac in human terms or belittling God’s possibilities (792).

A positive definition of either the future of humanity or what transformative work God can accomplish in and through us is idolatrous, for Schillebeeckx. It objectifies God and puts unnecessary limits on God’s power. A deep faith in human inability to envision the end of what God can do motivates a dialectical understanding of salvation and, as a result, the future of humanity. *God* is the future of humanity – the wholly new, who radically continues to transcend all our conceptual categories and expectations (Schillebeeckx 1968, 181). Thus, Christians can firmly root themselves in a confidence in the ability of God to bring humanity to its fulfillment, successfully avoid the temptation to delineate what this end is in a narrow fashion, and simultaneously also encourage human co-participation in bringing about human fulfillment. To facilitate this delicate balance between responsibility and expectation of assistance from a power that exceeds one’s own, Schillebeeckx relies on an image of the biblical Abraham leaving his father’s house in obedience to God, while unsure where he will be lead (Gen. 12:1; Heb. 11:8). In the model of Abraham, we strive for human flourishing with a confidence that the impossible is possible, even though we cannot clearly define what the impossible looks like (197). Indeed, the indeterminate quality of the human vision of the future is a value, in Schillebeeckx’s mind, because it forces us to never rest in our imaginative process or grow unresponsive to the ways that reality presses upon us and challenges us to readjust or expand our assessments¹¹. In another text he stretches the metaphor further, suggesting that Christians are

11 In a particularly revealing comment, Schillebeeckx distinguishes between the Marxist (as representative of secular activism) and the Christian: “The believer, who knows of the eschatological fulfillment promised to mankind and to man’s history, will be unable to recognize in anything that has already been accomplished ‘a new heaven and a new earth.’ Unlike the Marxist, for example, he will not even venture to give a positive name to the ultimate fulfillment that is to come. The Christian leaves the future much more open than the Marxist: in his view, the Marxist tends to close the possibilities prematurely. For the Christian, it is an ideological misconception to call one concrete stage in the development of human history the ultimate point” (Schillebeeckx 1968, 186).

the promised land themselves, “a land which, like Israel of old, we ourselves must claim and cultivate, trusting in his promise” (Schillebeeckx 1974, 5). Thus, he illustrates that eschatological faith consists in a trust that God will empower us (humanity) to transform ourselves through our own resources.

Like Deacon and other cognitive anthropologists, Schillebeeckx acknowledges that the ‘impossible’ is a social-symbolic category that has historical effects across human communities and attempts to ground the impossible in a religious reading of history so as to avoid “vague wishful thinking” (Schillebeeckx 1968, 157–58) and “futuristic fantasies” (Schillebeeckx 1974, 5). A future-orientation that is firmly rooted in the present, as well as the past (i. e., an understanding of the future as an “intrinsic dimension of the present,” 7), is able to re-read God’s history of faithfulness as a promise of the future eschatological fulfillment of creation¹². Schillebeeckx insists eschatological hope for the future must be firmly tethered to an eschatology of the present. In other words, the eschatological transformation of creation contains elements of continuity as well as discontinuity. Continuity is key so as to affirm the integrity and the validity of history, as well as to ensure the meaningfulness of human action. Continuity is needed to eschew an apocalyptic, interventionist understanding of salvation coming from God to humanity from without. Discontinuity is critical in order to affirm both the possibility of something truly new as well as to encourage something more than a sanctification of what exists and make possible a robust critique of socio-political structures and interpersonal sins (8). A future-orientation that is *not* grounded in an interpretation of the present and past risks an interventionist model of God’s saving action that, in Schillebeeckx’s estimation, cannot support the integrity of history and discourages human responsibility. To this, we might add that an interventionist model of God’s saving action also fails to provide a space for valuing insights from science.

The Christian expectation for human fulfillment (i. e., the impossible) is “promised in Jesus Christ and becomes real, through grace, in history,

12 As Steven Rodenborn argues, Schillebeeckx’s eschatology is a *prophetic* eschatology, rather than an apocalyptic eschatology (Rodenborn 2014). In other words, it is one that inspires a critical look at the world as it is. Eschatological transformation does not imply the total destruction of the created order (*contra* apocalypticism) nor does it imply the extension of what exists ‘as is’ into the eternal present (*contra* contemporary visions of political stability akin to *Pax Romana*). Eschatological transformation involves the fulfillment of nature by grace within the very framework of the natural history. This eschatological faith, thus, is supported by a robust form of creation faith (Schillebeeckx 1974, 10). Schillebeeckx argues that orientation to the past alone risks a lack of prophetic witness: a “risk of leaving the world as it is, of interpreting it, but not changing it” (Schillebeeckx 1968, 183).

and so *possible*" (Schillebeeckx 1968, 158, emphasis added). In other words, God has established the ultimate validity of the good in the resurrection of Jesus Christ. The resurrection extends Jesus' proclamation and praxis of the kingdom of God beyond his death, ensuring that Jesus' crucifixion might not function as an interruption of Jesus' (yet unfinished) work. This demonstrates that God's cause is the well-being of humanity (along with the well-being of all of creation). This confirmation of the life of Jesus, despite the partial nature of his efforts and even his apparent failures, confirms for Christians God's concern for human good and God's desire (and, moreover God's promise) to bring all of finite and failing creation to completion (Schillebeeckx 1975, 18–20; 1981, 791).

It is only in and through the promise of God that we can know that human flourishing is possible. This faith in the promise of God has a critical-practical effect on those who hold it to fuel an imaginative vision of good that transcends that which has already been achieved (Schillebeeckx 1968, 194). The person of faith cannot articulate in a positivistic way what is the content of human flourishing (and, indeed, the flourishing of the whole created order) any more than the one without faith can. Yet, because of her faith, the Christian does have an awareness of the eschatological promise of God, and with that awareness comes a support for imaginative hope to which the non-believer does not have ready access (191). A Christian eschatological faith supports and strengthens this fundamental human longing for future good in at least two ways.

First, a Christian eschatological perspective provides solid ground for natural human hope. How can a human community hold on to a common vision of the good when it is not clear that human good is possible? What can encourage a community to persist in a critique of the present order without falling prey to exhaustion? For Schillebeeckx, eschatological faith assures one that "it is indeed possible to build up humanity and that this is not a labor of Sisyphus" (Schillebeeckx 1968, 156). By interpreting human history as a history of salvation, an eschatological vision gives roots to natural human hope. In other words, it ensures that hope is neither mere optimism nor an untethered form of fantasy. Because of experiences of God's promises remembered in the past and actualized in the present, hope in the fulfillment of human flourishing as promised by God can be a genuine expectation. Consequently, what *should* not be *will* not be with the eschatological consummation of creation (Schillebeeckx 1980a, 101). A Christian eschatological vision expands the grounds for human hope beyond the limits of human achievement, such that we can affirm the fragmentary and partial achievements of human emancipative action as mediations of God's promise of salvation for

creation without restricting our imaginative vision merely to what appears possible through human ends. God can effect a transformation of creation that includes but also extends beyond what human action mediates.

Second (and in a related fashion), a Christian eschatological perspective generates an expansive kind of creativity and imaginative vision. On this point, Schillebeeckx is concerned that contemporary political-economic realities create a symbolic culture that over-prioritizes technical reason and efficiency. This can function to limit human imagination in tragic ways or even encourage humans to accept realities that are less than humane in the name of productivity. In this climate, it is easy for the human imagination to become imprisoned by the “impotency of dull satisfaction” (Rodenborn 2014, 102) or to be hemmed in by false preconceptions about the limits of human compassion and cooperation. A Christian eschatological vision, especially insofar as it always maintains a *proviso*, creates a dynamic of “permanent criticism” and “constant improvement” motivated by the “firm conviction that this building up of a more human world is genuinely possible” (Schillebeeckx 1968, 157). An eschatological vision provides the stimulus for imaginative action, especially when either despair or malaise threatens human communities. As Rodenborn puts it, “It is not hope itself, then, that Christ’s promise uniquely engenders but rather a hope with a uniquely inexhaustible range and reach” (Rodenborn 2014, 191). A specifically Christian eschatological hope never allows one to proclaim definitively within history: “[T]his is the promised future” (Schillebeeckx 1968, 78). Schillebeeckx is clear that we cannot realize our own nature, promise, and future in a complete process of emancipation (Schillebeeckx 1980b, 770). Yet, as the Council of Trent suggests, we do not do nothing for our salvation¹³. The eschatological future *requires* Christian praxis to aim toward human liberation; Schillebeeckx writes, “Where human liberation is possible, it remains a universal human task in the name of the Creator God, the redeemer” (765). The eschatological future cannot be *reduced* to what humans are able to achieve through their liberating efforts, since, Schillebeeckx writes,

the emancipatory process of self-liberation [is] a liberating human impulse which can only lead to partial, non-universal and provisional results, and in the last result finds itself confronted not only with the failure of any liberation which seeks to be total and universal, but also with the *alienating* character of any claim to total liberation (769).

13 I phrase it in this way, i.e., with a double negative, in order to reflect the paradoxical nature of this Christian teaching as well as to mirror the language of the Council of Trent on Justification. The decree reads: “[W]hile God touches the heart of man by the illumination of the Holy Ghost, neither is man himself utterly without doing anything while he receives that inspiration” (The Council of Trent, as cited in Waterworth 1848, 33).

For Schillebeeckx, this gap between what we are able to accomplish through our own efforts and that for which we hope cannot be closed without forsaking fertile ground for a dynamic human imagination. On the one hand, communities cannot imagine truly new possibilities if the tyranny of practicality limits their visions. On the other hand, if there is no connection between one's imaginative vision and the current order via a symbolic understanding of reality, there is no impulse to act on behalf of that vision. The human can support a fragile balance between possibility and impossibility via symbolic imagination as she senses an invisible system of connections and future possibilities within reality as it exists. Eschatological faith can function to stabilize further this balance as it positions hope as inclusive of human achievement, but refuses to be limited by it¹⁴.

The eschatological promise of salvation is a gratuitous gift from God to all creation. Yet, this is not a gift given to passive recipients. Instead, it is an invitation to participation in the consummation of the created order. Schillebeeckx writes,

On the one hand, eschatological hope is not a passive state of waiting for the future, but, on the other hand, neither is it self-redemption, as though the promised future could be realized by human achievement (Schillebeeckx 1968, 191–92).

Eschatological hope, then, is not participation in bringing about the kingdom of God already established but somehow still hidden from view. Instead, it is an active incarnation of the promise of the future and the very manifestation of God's future promise in history (Rodenborn 2014, 106). Eschatological faith gives expression to a symbolic understanding of reality, viz., that reality reveals and contains within it the possibility of the impossible. It is a faith that human beings can and will achieve the impossible in and through the promise of God, despite all apparent failures (Schillebeeckx 1968, 77). Eschatological faith, for Schillebeeckx, consists in a confidence that all human action that strives for the good is given "permanent validity" in God and works to participate in God's salvific transformation of the

14 Schillebeeckx offers the example of the negative contrast experience of a soldier who witnesses the "humiliated bewilderment" of an innocent person ordered to be executed by a firing squad by a dictatorship government (Schillebeeckx 1990, 95). This negative contrast experience gives rise to this soldier's refusal to shoot, despite full knowledge that his refusal will not spare the innocent individual his life and will also cost him his own. The positive hope that grounds this action of protest as something more than a sentimental effort and establishes this act as a "prophetic action in hope of the eventual triumph of humanity" (95) is supported by faith in a God who is capable of transforming our failed and partial efforts into the fulfillment of God's promise of well-being for the world. There are insufficient grounds for hope in these kinds of earthly failures if we limit our imaginations to the realm of human achievement alone (95–96).

world (Schillebeeckx 1980b, 791). Christian hope is fueled by this eschatological faith that “good must have the last word” (Schillebeeckx 1968, 76–77). Human action empowered by Christian hope is neither timid (since the Christian is confident that her activity is a necessary part of salvation) nor hubristic (since she does not mistakenly believe she can bring about salvation on her own). Human action empowered by Christian hope, instead, is courageous and self-consciously provisional. To blunt the provisional nature of Christian action is, paradoxically, to limit the possibilities of human good. Without the permanent criticism that eschatological faith affords, we fall into the trap of ideologically limiting human possibility (197; cf. 1980b, 792). Thus, eschatological faith functions in a critically negative way to ensure both a perpetual discontent with the world *and* a perpetual commitment to its good (through all means available to human beings, including explicitly “scientific and technical means,” Schillebeeckx 1968, 196)¹⁵.

The Christian recognizes the capacity of God to work in and through human history to actualize God’s promise of redemption of the world. According to Schillebeeckx’s non-apocalyptic eschatology, humanity, in and through the transformative grace of God, is given the capacity (and, indeed, the responsibility) to participate in the greater transformation of the world. Therefore, Schillebeeckx can argue that human impossibility is made possible in Jesus Christ; he explains,

The message which Christianity brings to the secular world is this – ‘humanity is possible!’ And, in the light of our *theological* concept of secularization, we can now add this – humanity is possible through the resources of man himself, but that means through the resources of redeemed man with his ‘new heart,’ which is a very different thing from a new heart scientifically transplanted, although this too must be included in the all-embracing activity which makes our history a history of the sacred possibilities of life (Schillebeeckx 1968, 193).

Eschatological faith commissions the Christian to transform in imaginative ways what *is* into what *should be*, converting the basic human impulse to imagine and expect into a responsibility to resist and create. As Schillebeeckx writes, “Eschatological hope implies faith that the Christian, by God’s justification, is responsible for the terrestrial event itself becoming a history of salvation” (185).

It is only a non-apocalyptic eschatology, particularly through an insistence on a non-dualistic ontological framework, that can maintain a strong relationship between human history and salvation history. This connection

15 As Schillebeeckx writes powerfully, “Acceptance of God is the ultimate, precise name which must be given to the deepest meaning of commitment to this world” (Schillebeeckx 1968, 76).

is necessary in order to preserve the meaningfulness of human action aimed at the good even when this action fails or falls short (as it always does if human communities keep alive a rich and dynamic imaginative vision of human good). It is Schillebeeckx's eschatology, supported by a non-dualistic ontology, that allows him to claim that "real human liberation, borne up by political love, refers concretely to the worldly fruitfulness of Christian redemption" (Schillebeeckx 1983, 338). Yet, especially because human action always falls short, eschatological faith ultimately turns on a "surplus of hope" that extends beyond what humans are able to achieve on their own (Schillebeeckx 1990, 99). Christian hope for the impossible is only made possible because of a promise made by a God who is approaching but yet still to come, and ratified with the resurrection of Jesus Christ. As Schillebeeckx puts it, "That is the paradox of Christianity – we tread in the footsteps of the God who is to come to us from the future and, in so doing, it is still we who make history" (Schillebeeckx 1968, 190). This paradox of responsibility and expectation of divine assistance is able to engage the symbolic human imagination so as to keep it perpetually self-transcending.

5. Human Wisdom: Critical Negativity and Perpetual Hope

That both biological anthropology and Christian theology name the symbolic imagination as central to the human niche¹⁶ identifies a surprising overlap between the two disciplines and suggests it might be beneficial to think together about what species-specific forms of intelligence, i.e., wisdom, emerge in this niche. The Christian theological tradition can offer to biological anthropology eschatological faith as one way that human communities (a) navigate the challenges posed to human flourishing by the symbolic imagination and (b) generate positive grounds for hope and endurance. Because human biological flourishing involves semiotic flourishing, religious traditions of human meaning-making should be of particular interest to biological anthropologists. Without the perspectives of religious 'insiders' on the dynamics of these wisdom traditions, biological anthropologists can miss integral components of cumulatively acquired cultural knowledge, particularly the mechanisms by which human communities ground hope and provide fuel for expansive imaginative visions. Conversely,

16 Of course, theologians are not prone to using the language of 'human niche,' but they frequently understand human beings as social, historical organisms in a process of becoming who they are and who are both affected by and affecting their environment. See, e.g., Schillebeeckx's anthropological constants (Schillebeeckx 1980b, 734–46).

because the secular is the realm of God's saving action and because history (including evolutionary history) reveals God to humanity, biological anthropology should be of interest to Christian theologians.

The Christian European 'theologians of hope' who began writing in the 1960s can be of particular benefit in a collaborative discussion with biological anthropology on the human symbolic imagination since they reject a zero-sum relationship between secular forms of knowledge (particularly the insights of science) and Christianity, while still insisting on the necessity of a surplus of hope that reaches beyond that which humans can accomplish through their own efforts. Of these 'theologies of hope,' the eschatological theology of Edward Schillebeeckx is particularly rich for dialogue with evolutionary accounts of the human person because his non-apocalyptic approach and strong theology of creation creates a clear space for evolutionary history to function as a positive source for theological reflection.

The eschatological theology of Schillebeeckx, especially when viewed in light of recent discussions in biological anthropology, can help us to recognize that the human symbolic imagination provides access to a sense of human well-being that underlies experiences of negative contrast. This well-being, especially in so far as it is yet nowhere experienced positively in its fullness, is the 'impossible' promised as possible with eschatological salvation begun but not yet complete in Christ. The human symbolic imagination fosters an acute sensitivity to the negative – that is, the symbolic imagination enables 'what if' wonderings and a perpetual awareness of the gulf between what *is* and what *should be*. While we wait for the establishment of full salvation (when the impossible will be brought about definitively), we are able to endure a perpetual awareness of the gulf between what is and what should be because of the hope eschatological faith engenders. This faith allows us to avoid the dangers of disavowal of our responsibility for the future that can come when our imaginative capacities are either overwhelmed (and we fall into despair) or underwhelmed (and we are dulled by apathy). Thus, human wisdom consists, at least in part, of a negative capability to transcend the limitations of one's context in order to imagine and implement the good in a self-consciously provisional way. Healthy and, indeed, wise human communities have a semiotic framework allowing them to endure life in the negative via the cultivation of hope. For Christians, this semiotic framework is eschatological faith.

When theological and anthropological discussions of imagination, human action, and (im)possibility are brought together, the claim that perception acts as a real historical (or evolutionary) force is amplified in both disciplinary spheres. While anthropologists can claim that perception and

belief are central to the human evolutionary process (e.g., Fuentes 2015, 176), theologians can argue that faith and hope can have a practical-critical effect to empower humans to participate in the salvation of the world in history (e.g., Schillebeeckx 1990, 99). But, it is the specifically *eschatological* character of Christian faith that specifies something significant about the way humans can negotiate the dangers accompanying symbolic imagination (viz., apathy and despair). Human wisdom is dialectical, operating from a position of permanent negativity and perpetually transcending itself in imaginative reach for the impossible. A shared eschatological vision is necessary for semiotic flourishing: It coordinates effort and can fuel a common resistance to that which fails to meet the ideals of the group. Christian eschatological faith ensures that human imagination always views itself as provisional while also strengthening the perpetuity of imaginative action by proclaiming the impossible is possible in Christ. Thus, human wisdom persists in a kind of clarity of negativity, a dialectical form of critical endurance in the midst of the “eschatological borderline case” of our existence (Schillebeeckx 1980b, 745).

6. Responses to Julia Feder

Gerald McKenny:

Could one simply put this in Aristotelian terms? I think Aristotle would say something like this: One thing that is characteristic of humans is to be able to have some conception of our end that constitutes *eudaimonia*, and to be able to have at least a provisional grasp of that end, in order to be able to approximate it. This is to possess wisdom, in the broad sense of the term. Wisdom is both involved in the process of orienting one's activities and habits, in view of one's end (that is, virtue), and through that process, coming to have an increasingly better understanding of one's end. So, my question is whether there is anything here that is not straightforwardly Aristotelian?

Mary Catherine Hilkert:

I think Schillebeeckx can contribute to what Aquinas did in relation to Aristotle within a historical (albeit a modern, or perhaps tending toward a post-modern) key. That is, Aquinas is largely building on Aristotle and retrieving Aristotle, but he has a different view of what is the ultimate end of humanity – the ‘eschatological’ – and what is our true destiny.

For Aristotle, the human end consists in contemplative conversation, friendship, and a well-ordered society, but Aquinas suggests (and by virtue of extension, this holds true for Schillebeeckx) that if our true end goes beyond that, if there is a transcendent dimension to the human, then humans are more than what we thought they were. This assertion doesn't deny anything of Aristotle. It is Aristotle plus another dimension.

Schillebeeckx does talk about negative contrast experience, as well as positive experience, as 'pre-religious.' His own theological interpretation of that human experience (NCE) is that it is grounded / empowered by the Creator God ("the absolute saving presence of the Creator God"). Yet, he thinks the experience of resisting evil and doing good (the impulse toward ethics and the implicit hope that things can be different in the future) is available to all (and he explicitly refers to this as a contemporary reformulation of natural law in *Church: The Human Story of God*, Schillebeeckx 1990). Christian faith was his hermeneutical lens, and his deep faith conviction drove him to make the claims he did, but still he is able to speak in a human, historical, and interdisciplinary key. This is something Feder's work illuminates for me.

Thomas A. Tweed:

If we are interested in theology engaging across disciplines, what is the theological method? What are theology's sources? If archaeology relies on sources such as stones, bones, and genetic material, what, then, are the sources for Christian theological reflection? Of course, there is scripture and tradition, but if we stop there I do not think this conversation will go very far, or at least as far as it could. I wonder to what extent Feder would embrace common human experience, which some Catholic theologians have embraced, and, I would add, as it is reflected in disciplinary knowledge. I wonder to what extent a theologian thinking about 'theological anthropology,' as theologians would name it, has an obligation to be in conversation with, though not necessarily agree with, biologists, psychologists, archeologists, and everybody else thinking about human experience.

Would you be willing to expand the notion of Christian theological sources to common human experience and, by extension, build a bridge to archeological material that tells us something about human wisdom in the evolutionary record? In other words, can engraved red ochre be a source of theological reflection?

Julia Feder:

Schillebeeckx takes very seriously the category of Christian experience, as well as common human experience. He did not engage this material from evolutionary anthropology, but I think his general view towards revelation and experience would support such a 'bridging' move, as you have put it. When Schillebeeckx discusses negative contrast experiences he intends to describe a nearly universal human experience. In other words, he comes just short of claiming this is indeed universally human, but it is as close to universal as we can get.

The Catholic tradition is particularly well equipped to recognize the interrelationship of theological source categories. For Catholics, Scripture is a part of the larger Christian tradition, and the Christian tradition is part of the larger category of human experience, etc. Our dialogue between biological anthropology and theology can help to expand these categories even further, so that we view 'experience' from a deep time perspective and can include evolutionary history as input for analysis of the full depth and range of human experience.

As a theologian I have found the Extended Evolutionary Synthesis to be helpful in flagging up the ways that religious belief – or perception and belief, more generally speaking – is *real*. The human imagination is a real force in history with very concrete consequences. Whether you analyze the role of imagination from a deep time perspective via evolutionary history, or even via a more proximate view of history, human imagination, perception, and belief are real forces. We cannot claim that material reality is the only 'really real' reality and that human perceptions of reality operate in a domain separate from material reality. Instead, material reality and symbolic reality affect and form each other in continual processes of mutual feedback.

In the same way that an Extended Evolutionary Synthesis approach expands the range of sources of evolutionary anthropology beyond genetic inheritance to include cultural inheritance (and, in particular, cultural or religious perceptions and beliefs), and thus makes room for inputs from other disciplines, theology also is in need of an expansion of sources beyond Scripture and tradition to insights gleaned about humans and their niches from other disciplines. Many theologians have begun this project of thinking about theological sources in an expanded way, and I think that Edward Schillebeeckx is one of them, but more work certainly needs to be done.

Chris Ball:

There is a set of literature within anthropology labeled the 'anthropology of Christianity.' Much of this literature is focused on non-Western societies' engagement with Christian missionization, and so looks at the ways in which, often, Christian conversion in non-Western societies can generate novel understandings of the modern individual subject. Questions of individual perfectibility or individual contemplation of ends are, in fact, broadly culturally and historically located in Western modernity in the way Christianity, as a vehicle among many others, brings that understanding of the subject to people in situations of conversion. One of the strongest proponents of this kind of study is the anthropologist Joel Robbins.

The idea of suffering seems to be a focus of Schillebeeckx, and Robbins also argues that within the last couple of decades sociocultural anthropologists have increasingly focused on suffering as a topic; Robbins calls them to move beyond what he calls the 'suffering subject,' which is also a part of the construction of the modern Western conception of the individual self who, in a way, is defined by a capacity for suffering.

It may be helpful to look at the anthropology of Christianity with respect to the questions of modern subjectivity and suffering as a component of it, and relativize your emphasis (and/or Schillebeeckx's emphasis) upon suffering by asking how it may be particular to the Western cultural context. This is not to suggest that people in other places do not suffer, far from it. It would be interesting, though, to link Christian notions of suffering (and other broadly Western cultural notions of suffering) to how anthropology as a discipline is trying to deal with a bias toward viewing suffering as a particular kind of universal object, and where anthropologists see the possibilities for moving beyond this view of suffering.

Thomas A. Tweed:

A feminist philosopher of religion in Britain has made a good argument about the patriarchal preoccupation that Christians have with mortality and argues that we should be talking more about natality – the wonder and joy of birth, etc. (Jantzen 1999). I take that very seriously and yet, the problem is, at least for me, that if you want to take the archeological record seriously, it is hard to find evidence of birth practices. I do not know of any preserved and incised umbilical cords. Maybe we are stuck with an emphasis on suffering and death because this is the evidence that is more easily preserved.

Agustín Fuentes:

Within biological anthropology, we do have some access to birth practices. Looking at the reconstructions of both trajectories, and our understanding of philosophy of gestation, birth, and particularly of early childhood, Sarah Blaffer Hrdy, Carl van Schaik, Judith Maria Burkart, and many others have argued that we have fairly robust evidence to suggest cooperative childcare and breeding, as a characteristic fairly early on in the human lineage. Again, obligate interdependence, the idea that birth and the raising of offspring was a multi-individual, maybe another kind of obligate interdependence, I think, gets us a little bit there in some way, and also opens up spaces for thinking about what this means long term. There are a number of scholars theorizing currently on what that might imply.

Jonathan Marks:

For birth, there is also the symbolic component in humans of treating the placenta as a ritual object, rather than simply eating it like an orangutan would. There is certainly an intellectual, symbolic, imaginary component in human birth. We are not going to discover any fossilized placentas, but we certainly do treat birth differently than other primates do.

Julia Feder:

Human experiences and cultural practices of death and birth are particularly difficult to pull apart especially because they are so intimately connected in women's experience. For example, my own experience of childbirth, even with the assistance of modern technology, was an experience of looking death in the face.

Celia Deane-Drummond:

The reality that the death rate for newborns has been high in many human communities reinforces the point that birth and death, though not collapsed experiences, are related. Often very young babies have not been necessarily considered human. This can shield the mother from the tragedy associated with multiple births and deaths of infants.

There can be something problematic about highlighting birth experiences as the antidote to a patriarchal emphasis on mortality because it can suggest that women need to be mothers. It can reinforce the erroneous paradigm

that women are meant to be parents and men are habitually fighting with each other in the public sphere and more exposed to the threat of death. If you use this idea of birthing as if this is the feminist answer, I am not sure it really is an answer because it reinforces this paradigm.

Susan Blum:

In terms of childbirth, women also died in addition to their babies. Many, many women died giving birth, and giving birth was a fraught and terrifying experience. As far as I understand, we are one of the few species that needs assistance while we give birth. That is a kind of place for wisdom to be observed because you cannot figure out childbirth on your own. You have to be taught how to help somebody have a baby, and so the transmission of this knowledge is part of birthing practices themselves. You can imagine terror and suffering in giving birth and after birth.

Agustín Fuentes:

Lee Gettler, my colleague in the Department of Anthropology at the University of Notre Dame, along with a number of other scholars, is making increasingly convincing arguments that it is not just females sustaining in childrearing or birthing, but that male humans, at least physiologically, are quite capable of engaging robustly in the process of parenting. Again, this is evidence of the deep form of obligate interdependence that characterizes human communities.

Julia Feder:

Surely, some more attention needs to be given to investigate the extent to which a focus on suffering in contemporary theology is shaped by narrowly Western and/or patriarchal understandings of the human subject. Schillebeeckx's theology can give us a starting point from which to acknowledge that experiences of suffering and joy, as well as experiences of life and death commingle in human life. He can also give us a starting point from which to articulate a hope that in the future these experiences can be pulled apart and that suffering will cease while the good will be given eternal significance. This may not be enough, but I think it is a good place to begin.

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From Hominid to Human

The Role of Human Wisdom and Distinctiveness in the Evolution of Modern Humans

While anthropology is often concerned with the question of how humans make meaning in the world, paleoanthropologists tend to avoid questions of human distinctiveness. This is not to say that there are not many hypotheses explaining human origins, only that there is a tendency to see the answer in terms of a specific evolutionary change. This research agenda is often couched in terms of the origins of 'behavioral modernity' as the key event making 'us' human. Here we present a brief overview of how researchers have used the concept of a 'symbol' to contextualize the debate. Then, we move to examining the archaeological record for indicators of when members of the human lineage began to produce and expand their cultural niche via symbolic means. Over the course of our evolution humans developed distinctive capacities to navigate social networks, live in complex communities, and interact with the biotic and abiotic world through symbol making. We propose that this process, in part, can be described as the evolution of human wisdom.

1. Introduction

Paleoanthropologists rarely, if ever, discuss a topic as seemingly ephemeral as human wisdom. However, applying the ideas generated by ongoing transdisciplinary discussions on the evolution of human wisdom to the questions of the origins of human cultures, complexity, and societies has potential utility (see Deane-Drummond 2014; Feder 2016, in this volume). Recent scholarship argues that the concept of 'behavioral modernity,' the hypothesis that modern human behavior (MHB) evolved separately from modern human anatomy, is a faulty concept (e.g., Shea 2011; Malafouris 2013; Garofoli 2015). However, archaeologists have critiqued this hypothesis more on a taxonomic or methodological basis rather than a theoretical one. Some have argued that behavioral modernity fails as a concept since it is not tightly correlated with specific cognitive mechanisms (Garofoli 2015). Replacing the term with other, more restrictive phrasing narrows our sights

onto specific regions, sites, or species, but, in doing so, it also paints what we see as too simplistic a definition (e.g., Henshilwood and Marean 2003; Collidge and Wynn 2005; Shea 2011; Malafouris 2013; Wadley 2013). Why is it better to be exclusive rather than inclusive when defining what makes us human? Parsimonious explanations are seen as inherently better, though for behaviors as variable as human actions this may not be true. We propose that the concept of wisdom, as an inclusive and broad heuristic, can assist in re-positioning the ways paleoanthropologists, and others, can rephrase their questions about when and how hominins became human. One reviewer has questioned our use of the term wisdom, suggesting instead that we use 'self-conception' or 'symbolic thinking.' To be clear, our working definition of wisdom is a species-specific intelligence that emerges from our ability to think symbolically and create and interact within a symbolic cultural niche. We can see it as the collective suite of behaviors that includes speculation, imagination, ritual performance, religious behavior, and other similar behaviors. It thus includes symbolic aspects but recognizes that this is but one aspect of the complex human cultural niche. Other aspects that can be recognized are our ability to create, and function within, large non-kin groups, to cooperate, and to display compassion (Fuentes 2004; Marks 2015; Spikins 2015).

Archaeologists are making the claim that symbolic thinking equals behavioral modernity. This leads to the assumption, sometimes explicitly so, that modernity is a single trait that has a definitive origin point: the appearance of material evidence for symbolic thinking. Even critics of the MHB hypothesis suggest that we can locate regions in the brain that separate *us* versus our non-modern ancestors (Wynn and Coolidge 2009). We are suggesting that wisdom works as a beneficial heuristic precisely because it encompasses many aspects of human distinctiveness. One of these aspects is the ability to think and imagine about, as well as interact symbolically with, the biotic and abiotic world. In fact, a useful way to view modern human behavior is as a niche. The elements that make up this niche covary with each other, creating a complex feedback system, and, by doing so, create processes that we assemble under the rubric of human wisdom. From an archaeological perspective we will only be able to view a few elements in the matrix that constitutes the niche, as the majority of behaviors will either be archaeologically invisible to begin with or will be affected by diagenesis (chemical and geological processes that can affect organic remains and will often affect the preservation of archaeological data) and other site-formation processes. Focusing on symbolic artifacts, ones that have been embedded with cultural meanings, allows archaeologists to see

how the human symbolic social niche expanded, but it also ignores other data that may be more difficult to recognize.

We are complicating the association of symbolism with contemporary humanness. Research clearly indicates symbolic thought is a distinctively human trait but we want to emphasize that it is one aspect of a complex system. In this sense, symbolic behavior is a subset of behavioral modernity; MHB has elements not seen in symbolic behavior. Discussing the evolution of human wisdom, then, reminds anthropologists that there is more to being human than symbolic thought. Babies are unable to think symbolically yet are immersed in the symbolic social niche, so too are individuals for whom symbolic thinking and language may not be possible. What is and is not moral may not be the same for everyone. We recognize 'wisdom' is not a term used in paleoanthropology, but in this case we see this as a positive aspect, as it forces us to rethink core assumptions about the process of human origins.

Furthermore, the use of the term 'modernity' connotes a sort of superiority over other, earlier members of our genus. While evolutionary biologists are careful not to suggest the most recent iteration of a species is 'better' than its predecessors, modernity assumes this to be the case. Yet, *Homo habilis* did perfectly fine without full-fledged MHB, as did *Homo erectus*, the first of our genus to migrate out of Africa, use fire, produce engraved objects, and create complex tool technologies. The evidence presented here, which problematizes the idea that MHB has a single, and comparatively recent, origin, also suggests that our genus was well equipped to think symbolically and produce complex material goods before anatomically modern humans evolved.

2. Background

Many scholars argue for a significant time gap between the earliest *Homo sapiens* fossils at ~195 kya and the archaeological evidence for what has been called 'modern human behavior.' Paul Mellars suggests:

[T]here was a major increase in the complexity of the technological, economic, social, and cognitive behavior of certain African groups, which could have led to a major demographic expansion of these groups in competition with other, adjacent groups. It is suggested that this complex of behavioral changes (possibly triggered by the rapid environmental changes around the transition from oxygen isotope stage 5 to stage 4) could have led not only to the expansion of the L2 and L3 mitochondrial lineages over the whole of Africa but also to the ensuing dispersal of these modern populations over most

regions of Asia, Australasia, and Europe, and their replacement (with or without interbreeding) of the preceding 'archaic' populations in these regions (Mellars 2006, 9381).

In other words, Africa acted as a sort of holding ground, where anatomically modern humans (AMH) waited until they acquired the behavioral capabilities necessary to expand beyond their circumscribed area. Even with increasing knowledge of the complexity of Middle Stone Age behavior (MSA, which begins ~290,000 years ago and lasts till the beginning of the Later Stone Age, which began between 50–25,000 years ago throughout Africa) it is still common to read that there was a time lag between anatomical and behavioral modernity.

Furthermore, there is a tinge of colonialism in the time-lag hypothesis, as it implies early African AMHs were not *really* human (McBrearty 2007). It suggests a behavioral threshold that prevented the earliest African *H. sapiens* from being fully modern. This view has been questioned by some, notably in a highly-cited paper by Sally McBrearty and Alison Brooks, where they argue that the roots of the 'Upper Paleolithic Revolution'¹ can be found in the African Middle Stone Age and that there is no disconformity between anatomically and behaviorally modern humans (McBrearty and Brooks 2000). With the discovery of Blombos Cave (Henshilwood et al. 2001), Pinnacle Point (Marean 2010), and other sites from the MSA, the 'emergence of modernity' research has now centered on South Africa as the region where it is believed, if not the origin of, then certainly the major center of cultural modernity will be found (Marean 2010; Henshilwood et al. 2011). However, in some sense this theory is not much different from that of the Upper Paleolithic Revolution, with the exception of it being located at a different time and place. The theoretical framework has remained the same.

It is also unclear what 'modern' means. From a sociopolitical perspective, talking about modern behavior is complicated by the recognition that *modernness* has real world implications². Is it better, as some argue, to talk

1 The Upper Paleolithic Revolution suggests modern human origins has its roots in Europe. Based on changes in the technology, art, and cultural practice (such as burying the dead) seen in Europe after 50,000 years ago, it was believed the florescence of human culture occurred in Europe as modern humans outcompeted Neandertals and other archaic humans. It was proposed as being analogous to the so-called Neolithic Revolution that occurred with the origins of farming. Few anthropologists accept the European-centric part of this model, though the notion of a major change happening around this time is still common.

2 The archaeological record of Australia, first inhabited ~50,000 years ago (Summerhayes et al. 2010; Davidson 2013), is often ignored in such debates, but proves to be very theoretically relevant. Habgood and Franklin argue the earliest Pleistocene inhabitants of Australia, while anatomically and behaviorally modern, did not possess the full

about behavior that is either “fully cultural” (Holliday 2003) or “symbolically organized” (Chase 2003)? Or should we discuss the evolution of “modern cognition” (Wynn and Coolidge 2011), “complex cognition” (Wadley 2013), “behavioral variability” (Shea 2011), or even the “human socio-cognitive niche” (Whiten and Erdal 2012)? Christopher Henshilwood and Curtis Marean suggest the term “fully symbolic *sapiens* behavior,” as it emphasizes the uniqueness of *H. sapiens* compared to Neandertals (Henshilwood and Marean 2003). Even so, in some sense the problem is their term *assumes* there must be something unique about AMH behaviorally that sets the population apart from contemporaneous groups in the genus *Homo* (e.g., Neandertals). By assuming important behavioral differences, it is not difficult to find behaviors Neandertals did not engage in, but MSA/LSA humans did, that becomes the defining feature of modern/fully cultural/symbolically organized behavior.

John Shea argues for discarding the terms ‘behavioral modernity’ and ‘modern human behavior’ since they lack precision, suggesting there are no vast behavioral differences between the earliest *H. sapiens* and modern humans (Shea 2011). Instead, he notes behavioral variability is a better way to contextualize the issue, as it emphasizes the different behavioral patterns seen in the archaeological record of *H. sapiens*. However, while open to the possibility this ability may have been older, he, and many others (McBrearty 2013) reject the idea that the Neandertal record is relevant to the debate.

Another solution is to remove the emphasis on the symbolic and instead concentrate on technological innovations as Lyn Wadley has suggested (Wadley 2013). While archaeologists have not always been specific as to what constitutes an innovation, one definition emphasizes innovation as “something new to hominin lifeways,” be it a behavior, artifact, or new type of social organization (Coward and Grove 2011, 113). Creativity is directly associated with innovation but the causes of innovation are unknown. Interestingly, Wadley suggests attention be placed on the role of dopamine transmission (Wadley 2013). Jaime Settle and her colleagues note that variation in a dopamine receptor gene is associated with novelty-seeking (Settle et al. 2010). While interesting, such links between genes and behaviors are tenuous at best (Charney and English 2012). However, there is much to

‘package’ of traits associated with modern human behavior, which suggests the absence of these indicators does not mean the population was incapable of symbolic thought, but simply that they did not leave the sorts of evidence we expect to see (Habgood and Franklin 2008). Interestingly, the signals of modernity are separated both geographically and temporally in Australia, which proves to be an interesting analogy for what we see in Europe and Africa, though at an earlier time.

be said for decoupling innovations and symbolic representations. We could see them as part of the complex package of human wisdom. Rather than tracing the evolutionary fitness of specific aspects of modern human behavior, we argue it is better to view the entire suite of behaviors in the context of a niche construction approach as a suite of symbolic-social human interactions.

It proves difficult to find the correct phrasing for this question which, at its heart, deals with what makes us human. This may be because the question in paleoanthropology itself has not been developed properly. Many researchers who postulate about key events in human evolution base their assertions on assumptions of classic Neo-Darwinian evolutionary theory that are currently being modified and altered via new methodological and theoretical contributions of the Extended Evolutionary Synthesis (Laland et al. 2014; Deane-Drummond and Fuentes 2014; Fuentes 2015). It is clear there is something distinctly human about how we interact with and understand the world. Changes in the human niche, over our shared evolutionary history, gradually produced what we think of today as *modern* behavior. But, the creation of a distinctively human niche, just like the evolution of anatomically modern humans, was a process, not an event. The primary data is archaeological in nature and revolves around the appearance and use of what archaeologists refer to as ‘symbolic’ objects. However, discriminating between non-symbolic and symbolic artifacts is far from simple.

3. Symbolic Meaning

In the search for signals of modern behavior, archaeologists have concentrated their efforts on delineating the geographic and temporal aspects of symbolic thought. This raises two major questions: Why has symbolic thought been the focus of research and how can anthropologists recognize symbolically-mediated behavior in the archaeological record?

In archaeological investigations, much of the debate centers on the definition of what a symbolic object is. For most archaeologists, something is symbolic if it represents, or signifies, something else. However, this definition is not definitive enough to help us parse the far-from-perfect archaeological record. While not always explicitly noted, this work centers on semiotics, the study of signs and symbols. For Ferdinand de Saussure a sign is comprised of two parts, the signifier and the signified (Saussure 1983). Saussure focused on the arbitrary connection between the object being signified and the acoustic label that signifies it. It thus is mostly applicable to the human

world, as natural signs would not be random or conventional. Saussure's dyadic model is applicable to linguistic signs, making sound, rather than vision, the central focus of study (Waal 2013). The fact that it is not focused on objects themselves makes it less relevant to archaeological interpretations, though this application is promoted by some scholars (Henshilwood and Dubreuil 2011). As noted by Derek Hodgson, this allows scientists to emphasize the potential for early human language, and scholars interested in the evolution of language are more likely to utilize this definition (Hodgson 2014).

Based mostly on Terrence Deacon's and Merlin Donald's work (Deacon 1998, 2012; Donald 2002), paleoanthropologists have applied Peircean semiotics to the question of human symbolic thought. It has proved to be very valuable, as it is not language-driven like Saussure's approach. It can thus be applied to the natural world and the human world (e.g., Kohn 2013). Charles Peirce argued a sign has three components: the sign-vehicle (the *representamen*), the object, and the *interpretant*. It is the addition of this last part that makes Peirce's system distinct from Saussure's, as it creates a triadic system. While his definition changed over time, making it difficult to parse his theory, the *interpretant* is what allows an individual (which does not have to be human) to translate between the sign and its object.

Peirce describes three ways in which a sign is related to its object (Peirce 2009). Icons are signs where the concept being signified resembles the signifier (e.g., porcupine's quills are clear icons for their sharpness if touched). Indexical signs are ones where the *representamen* is linked to its object in a causal manner (e.g., smoke is an index of fire). Symbols are only connected to the concept they signify since this connection is agreed upon by its users. Signification can only occur symbolically if the sign relies on conventions, laws, or shared agreement and understanding to signify its object.

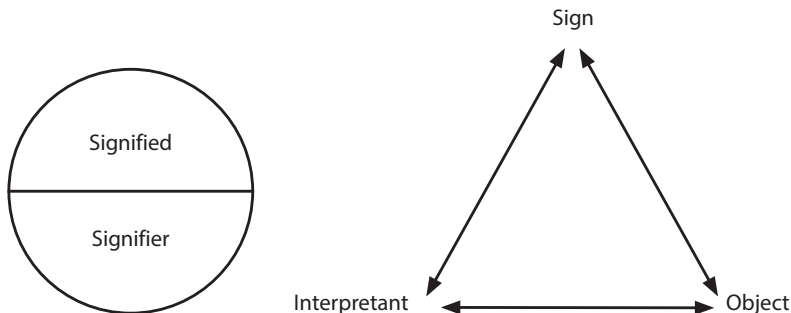


Figure 1. Comparing Saussure to Peirce.

Many archaeologists invoke the term symbol in a Peircean sense, though some argue other interpretations are better suited for the archaeological record. For example, Peter Gärdenfors is skeptical of much of the discussion of the use of beads as a proxy for symbolic thought. He stresses the Saussurean symbol is arbitrary and learned while an archaeological symbol is “iconic, invented, individualistic, nonreferential, enduring and often costly to produce” (Gärdenfors 2011, 383). However, this conflates iconic and symbolic signs. One of the benefits of the Peircean system is the three types of referential signs allow for all of these to be encompassed in human thought processes.

Symbolic thought is an emergent property of semiosis, possessing unique properties icons and indices do not have, including the ability to refer to objects and concepts not present. However, the concentration on symbolic thought can be problematic as we cannot have symbolic thought without iconic and indexical thought. Oftentimes, these two types of referential associations are seen as less important than symbolism. But, without them we cannot make the logical connections necessary as sign vehicles are interpreted in all three ways, beginning with iconically, then indexically, and ending symbolically (Deacon 2012). We need to move away from privileging symbolic thought, as iconic and indexical systems are equally important in human cognition (Ball 2014). We also must remember that semiotic systems need not be symbolic (Kohn 2013). Perhaps the reason for so much debate about whether a particular artifact class, such as shell beads, is representative of symbolic thought is that different scholars are using different semiotic schemes (Peircean or Saussurean). Human wisdom, broadly defined, gives us a way to talk about human behavior in a more inclusive sense.

There have been some claims for symbolic thought in non-human primates. The report of a chimpanzee drumming on a tree to communicate information has been described as symbolic communication (Boesch 1991), but the actual description suggests it is an iconic system³. While there have been studies showing what seems like a human-like ability to use numbers in chimpanzees (Kawai and Matsuzawa 2000), others have noted that chimpanzee understanding of number concepts seems to not be as open-ended as in humans (Hauser, Chomsky, and Fitch 2002).

While the application of Peircean semiotics to the archaeological record is far from perfect, the recognition that the three types of sign-object relations

3 While it may actually represent more of an indexical communication, it does not seem to have the conventional requirement of a symbolic sign.

are pertinent to human thought is an integral one and can be useful for archaeologists, who after all work with visual data. While in what follows we use the word 'symbol' to connote evidence of a behavior which may be unique to humans, and thus part of human distinctiveness, we also must keep in mind that these objects also have iconic and indexical meanings, which also played roles in developing and expanding the human niche. However, it is the symbolic aspects of these items, or their potential to be used as symbols in a semiotic system, that designates them as indicators of the particular aspects of the human niche in which we are interested: those previously linked to behavioral modernity and which we now suggest might be better linked to a robust capacity for wisdom. The data in such an endeavor reside in the materials themselves and, just as importantly, in the timing, patterns, and distribution of such materials. So an initial attempt to move forward via the context we propose here mandates that we first see what the data actually are.

4. Project Database

It is rare to see discussions of all the archaeological indicators of contemporary human behavior in one place. Usually, focus is either on a single artifact class, specific site, or an archaeological culture. In order to understand how the human niche expanded, we must incorporate *all* the possible evidence for complex human wisdom. With this in mind we created a database of archaeological evidence of when early humans began to use complex technologies and produce objects that may have symbolic meaning or clearly non-utilitarian purposes. This includes the use of exotic raw materials, complex lithic technologies, artifacts made from osseological materials, objects that were purposefully engraved, ornamentation such as beads, and figurative art. We currently have entered more than 400 artifacts of various types from over 75 sites located in Asia, Africa, and Europe, from sites associated with early modern humans, *Homo erectus*, and Neandertals.

Geographically, the majority of these sites are located in Southern Africa and Western Europe (Figure 2). However, it is not clear that the ability to create these artifact types has a single, or even just a few points of, origin, as there is no clear geo-temporal pattern to the data. The majority of the sites (~66%) postdate 100,000, which is not surprising considering preservation and demographic issues (Premo and Kuhn 2010), but also suggests that as humans evolved new ways of interacting with others (both conspecifics, other animals, and the environment) they engaged in niche construction,

a mutual mutability between organisms and their environment that can affect patterns and pressures of natural selection and create ecological and other non-genetic inheritances (Odling-Smee, Laland, and Feldman 2003; Jablonka and Lamb 2005; Deane-Drummond and Fuentes 2014; Laland et al. 2014). This process can have large-scale effects on the next generation, ratcheting up cultural evolution through social learning (Tennie, Call, and Tomasello 2009; O'Brien and Laland 2012). Perhaps the most interesting observation is the dating of these artifact types: Every major category of proposed symbolic representation occurs before the appearance of anatomically modern humans (at ~200,000 years ago).

5. Data Overview

While the majority of scholars have argued that modern human thought arrived either with the evolution of anatomically modern humans (McBrearty and Brooks 2000; Shea 2011) or after (Mellars 2005; Tattersall 2008), one of the first questions we asked was if there were data supporting a working hypothesis that these behaviors are actually older than either of these answers allow. Indeed, as the record for complex thought and human-like behavior in Neandertals grows stronger (Zilhão et al. 2010; Peresani et al. 2011), it seems likely that the answer to this question is yes. Below is a short summary of these data.

The use of bone technology⁴ has often been included in the suite of features demarcating the Upper Paleolithic Revolution, but recent work has shown a more complex picture (Henshilwood et al. 2001; Backwell, d'Errico, and Wadley 2008). The earliest recorded bone tool technology in the database comes from the site of Broken Hill (also known as Kabwe), central Zambia, dating to older than 300,000 years ago. Using modern taphonomic standards, Lawrence Barham and his colleagues show three artifacts that are intentionally shaped tools, dating from 700–300 kya (Barham, Pinto Llona, and Stringer 2002). Another example of non-lithic tool use comes from the wooden spears from Clacton (Allington-Jones 2015) and Schöningen (Thieme 1997), the former of which dates to around 400 kya and the latter to, most likely, 300 kya (Kuijters et al. 2015).

The second oldest artifact type in the database are materials that are purposefully engraved such as ochre, ostrich eggshell, and osteological remains.

4 It may not require too much of a cognitive leap to apply methods of producing chipped stone tools to the bone fragments left over from a meal, but this has not been tested yet.

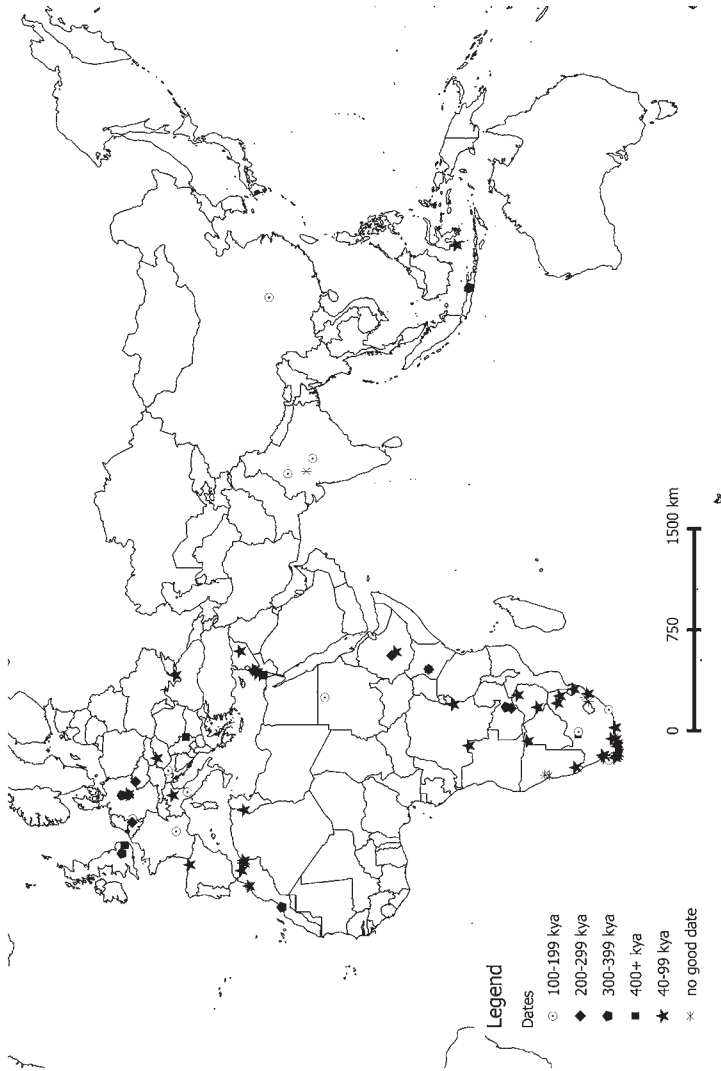


Figure 2. Map of the location of all of the sites in the database of Pleistocene 'symbolic' activity.

Much work has centered on what, if anything, these markings mean and whether archaeologists can infer symbolic thought from these artifacts. Some argue the engraved ochre pieces from Blombos Cave are fully symbolic and should not be viewed as idiosyncratic behavior but rather inform on the symbolic aptitudes of MSA humans (Henshilwood and Dubreuil 2009). Others question whether these are fully symbolic signs (Malafouris 2008; Hodgson 2014).

Interestingly, the earliest engraved objects found in our analysis not only predate *H. sapiens* but are found outside of Africa at the site of Trinil in Java (type site of *H. erectus*), where Josephine Joordens and colleagues report on an engraved geometric pattern on a *Pseudodon* bivalve (clam-like animal) shell (Joordens et al. 2014). Other examples, such as an engraved stone from Tata, Hungary (Marshack 1976), are more recent (~100 kya) but are outside of the core region proposed for modern human origins. One of the most controversial finds comes from the site of Middle Pleistocene site Bilzing-sleben, Germany, where half a dozen bone fragments have been reported as having engravings at 370–230 kya (Bednarik 1995; Mania and Mania 2005). However, there has not been much published on the bones and some archaeologists have questioned the taphonomic aspects of the faunal material (Davidson 1990), making us reticent to include it until a more detailed analysis is completed.

The production of blades – stone tools that are at least twice as long as they are wide – has been used as a sign of modern cognition. Blades have been discovered at two sites in the Kapthurin Formation in Kenya, between 545–509 kya (Johnson and McBrearty 2010) and are reported from the site of Kathu Pan 1, South Africa, which dates to approximately 500 kya (Wilkins and Chazan 2012). Interestingly, this site has provided evidence of the earliest stone tool projectile points as well (Wilkins et al. 2012). Many archaeologists would be skeptical that stone tools can be indicators of modernity. Yet, for a long time blades were seen as markers of complex, cognitive thought (Joris et al. 2011). Furthermore, archaeologists are perhaps too quick to deny symbolic aspects to lithic technologies (Sterelny and Hiscock 2014).

Beads are often seen as indicating the need to demonstrate group identity, though this has never been shown to be a prerequisite for body adornment. Seeing beads as evidence of symbolic thought has much support (Kuhn et al. 2001; Vanhaeren and d'Errico 2005, 2006) but has not gone unquestioned (Wynn and Coolidge 2011). Usually, it is argued the earliest beads are found in South Africa (d'Errico et al. 2005), Southwest Asia (Bar-Yosef Mayer, Vandermeersch, and Bar-Yosef 2009), or Northern Africa (Bouzouggar et

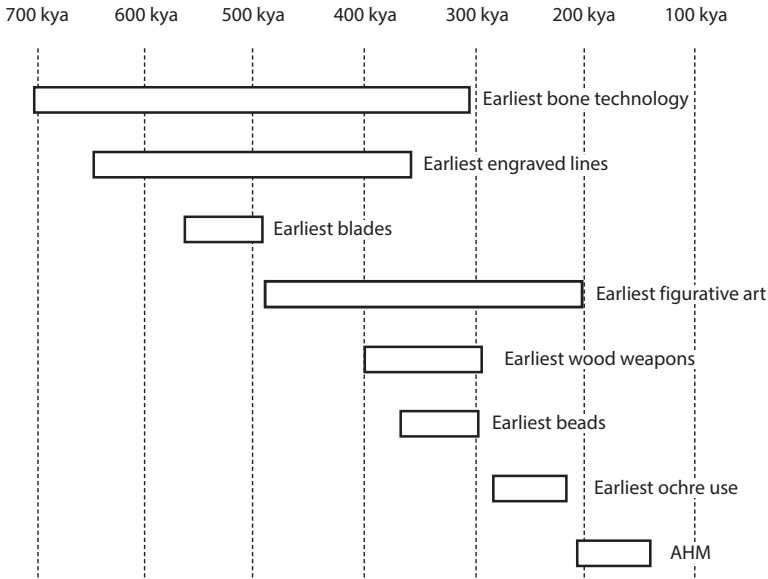


Figure 3. Chart of the first appearance date of symbolic behaviors.

al. 2007) and are associated with modern humans around 100,000 years ago. However, Bednarik reports on a study of over 300 shells from archaeological contexts, most of which come from Acheulian sites dating to older than 300 kya (Bednarik 2005). Wear facets indicate the shells were strung on a string or faced abrasive wear as they rubbed against each other, suggesting their use as beads.

The evidence for the earliest figurines is also provocative. The Berekhat Ram (470–230 kya, Israel) and Tan-Tan (500–300 kya, Morocco) artifacts fit the description of what may be called an iconic sign type. Most scholars accept these as legitimate (d’Errico and Nowell 2001), but debate revolves on if they are truly symbolic artifacts or not. Other examples, even older, are more equivocal and need to be restudied and analyzed with modern techniques, such as the Makapansgat Pebble, which may be three million years old and seems to have been purposefully collected by hominins due to its anthropomorphic features (Bednarik 1998).

While it is unclear if ochre⁵ use is strictly non-utilitarian (Watts 2002; Hodgskiss 2014), the collection of ochre suggests an expansion in the human

5 Ochre is a mineral usually formed as a type of rock that can be used as a pigment and adhesive.

cultural repertoire. Ian Watts argues that ochre in the MSA demonstrates ritual display, perhaps during menarcheal initiation, but it does not require symbolism until the habitual use of the pigment is recorded (Watts 2002). Others have suggested the color red is a biological signal indicating strength and high-testosterone levels (Hill and Barton 2005; Wiedemann et al. 2015). This may explain why early humans heat-treated ochre to change its color from yellow to red, a process that seems to have been performed by human groups at Qafzeh, between 118,000 to 75,000 years ago (Godfrey-Smith and Ilani 2004), and at Skhul, which dates to 135,000 to 100,000 years ago (d'Errico et al. 2010), both of which are cave sites located in modern day Israel. The cognitive implications of heat treatment suggest that planning and a sort of mental algorithm would have to be involved. The database also records ochre use as older than 200 kya at Twin Rivers, Zambia (Clark and Brown 2001), Sai Island, Sudan (Peer, Rots, and Vroomans 2004), and Maastricht-Belvédère, Netherlands (Roebroeks et al. 2012), spanning continents and, perhaps, species.

6. Looking Forward

The modern human behavior concept assumes, at its core, that some early human groups were not behaviorally modern. As with debates as to the 'humanness' of Neandertals (Trinkaus and Shipman 1992), the question of how we became modern is steeped in political and philosophical arguments about what it means to be human. Can we define our species on the presence or absence of one specific physical or behavioral trait or is being human more complex than that? Tim Ingold reminds us that we are constantly re-making ourselves and our identities (Ingold 2010). What makes us human, more than the fact that we are bipedal, eat cooked foods, or can think symbolically, is our shared evolutionary history, during which time our ancestors expanded the human niche in remarkable ways. It is not that symbolic thought is a more significant portion of wisdom than others, but rather that this is a key variable that we can identify in the archaeological record.

Based on this initial assessment of the database we have assembled, there is good reason to suggest that complex, even symbolic, cultural behaviors, often seen as a prerequisite for being human, first appear over 300,000 years ago, well before AMH are reported. Perhaps this is an example of "running ahead of time" (Vishnyatsky 1994), where a behavior shows up before it becomes common but fails to become widely used due to lack of their necessity (or due to the low population density and widely distributed group

of hominins at the time; e.g., Premo and Kuhn, 2010). Regardless, it seems clear that pre-*H. sapiens* members of the human lineage were exhibiting complex behavior previously attributed only to us. Neandertals were using ochre (and perhaps creating rock engravings; Rodríguez-Vidal et al. 2014), *H. erectus* were creating patterns on shell bivalves, *H. heidelbergensis* were making wooden spears, and, in general, a range of early human populations were engaging in socially meaningful *and* materially complex, semiotic behaviors. We need to rethink the question of what made *H. sapiens* so successful. Perhaps too much work has centered on symbolic thought as a distinctive item, detached from other aspects of humanness. More emphasis should be placed on the increasing role of human imagination, how we perceive and experience the world, and how those processes feedback in a niche construction context affecting the minds, bodies, and ecologies of humans, something which the archaeological record attests to (Fuentes 2014, 2015). Eduardo Kohn reminds us that semiosis is central to life (Kohn 2013). Asking how modern humans engaged with this semiotic world and expanded their semiotic capabilities to include symbolic thought can provide additional richness to the question of what makes us human.

The behavioral modernity hypothesis is rooted in Neo-Darwinian evolutionary theory and is often without the benefit of theoretical insights from the Extended Evolutionary Synthesis (EES) which emphasizes the role of diverse evolutionary processes rather than simply prioritizing natural selection as the only architect of function (Jablonka and Lamb 2005; Laland et al. 2014). Along with genetic inheritance, epigenetic, behavioral, and symbolic inheritances are of fundamental importance in shaping human evolutionary history and trajectories (Jablonka and Lamb 2005). Ignoring these parameters robs us of potentially valuable tools for investigating human evolution and connecting those investigations with the material evidence of complex semiosis and the development of symbolic meanings – and the societies in which they were developed and deployed.

The production of bone tools, the use of ochre, and the creation of patterns may not have direct fitness value in the genetic or memetic sense, as assumed under strict selections models, but the EES suggests that if these elements affect ecological, symbolic, and behavioral inheritances and are used as part of the behavioral and ecological feedbacks in the human niche, then they need not have traditional ‘fitness’ value as individual traits. As Jonathan Marks suggests, humans are biocultural animals “shaped by their historical environment, that is, by the things our ancestors said and did, and in turn construct our present environment technologically, socially, politically, economically and linguistically” (Marks 2012, 155). Human biological evolution cannot

be studied separately from human cultural evolution, and evolutionarily relevant processes need not all be tied to reproductive (or replicating) success via a standard selection model⁶. Just like becoming human is a process, so is being human. The first step in understanding what it means to be human is to think not in terms of what humans *are* but instead to concentrate on what humans *do* (Ingold 2010). We cannot explain behavioral modernity solely as a way in which humans used a new behavioral scheme to increase their genetic fitness. In order to accurately model human evolution we need to view human cultural evolution as a product of the intersecting of different inheritance schemes. As group dynamics became an increasingly important aspect of human life, our ancestors needed to find new ways to interact with the world. Though this expression, we see the origins of contemporary human behavior. Mimesis may be more powerful than memetics.

Instead of arguing that a specific trait made us human, we take a different approach and restate the question above: How did symbolic and behavioral inheritance systems, alongside genetic ones, produce the significant changes in the human cultural niche that led to our species remarkable ability to create, collaborate, coordinate, and engage in a distinctively human wisdom? The interaction between the brain/ mind/ communities/ culture/ local ecologies and the material record, which reflects the dynamics of these processes, is not a one way interaction – it consists of mutually mutable, interactive elements embedded in deep multi-level feedback relationships (Fuentes 2015). Thus, a systems-based approach is necessary to understand such complex processes. As the human niche expanded, we became more adapt at navigating increasingly complex social networks, though symbol-making, imagination, and intensive cooperation (Deacon 1998; Fuentes 2014; Tomasello 2014). This is a situation in which the concept of ‘wisdom’ proves salient. Symbol-making and the development of systems of symbol use, and mis-use, was one way humans were able to cope with these increasing social, communicative, cognitive, and ultimately metaphysical pressures. It is also a key manner by which we navigate and continuously remake our own social environment – how we deploy wisdom. Researchers interested in the evolution of human behavior are better equipped to understand the

6 The standard model assumes relevant variation (behavioral, material, etc.) has an evolutionary cost and the better ‘fit’ variants are those that give their holders a better chance for reproduction (on average, in a single population, across multiple generations), thus resulting in a higher ‘benefit.’ Under classic assumptions of the selection model, variants that are better fit should be over represented in a population and thus the presence and maintenance of a particular behavior (such as ochre use or etching on bones and shells) that become more common should have become so due to a particular fitness (ultimately reproductive) benefit conferred.

humanization of hominins, which is what engendered human distinctiveness, by worrying less about specific traits or single events and engaging in broader approaches to understand how expanding social networks, along with the creation and flow of information, led to the widespread success of our species, a process that can be seen as the evolution of human wisdom.

7. Responses to Marc Kissel and Agustín Fuentes

Christopher Ball:

You mentioned in the paper the distinction between the Saussurean dyadic model of the sign and the reasons why we would adopt a Peircean triadic model composed of icon, index, and symbol. Peirce being obsessed with threes, he not only had icon, index, and symbol in threes, but also had three other, well, two other trichotomies of signs. The relevant one here is the first trichotomy: *qualisign*, *sinsign*, and *legisign*. His example of a *qualisign* is precisely the feeling of red that one might experience upon waking, half asleep, and not yet opening your eyes, but seeing the inside of your eyelids, like the phosphenes seen when you close your eyes tight. It is the lower limit of semiosis for Peirce, this phosphene awareness. Now, as a *qualisign*, it is almost not yet a semiotic notion, element, or process. It is just a possibility. From there Peirce moves into higher levels of semiosis, and again, we are not talking necessarily about the particular types of signs, like icons, indexes, and symbols yet, but just the level at which a sign exists, as a possibility, as a unique entity, or as a pattern. A *qualisign* can be recognized to be an individual sign, which would make it a *sinsign*. For example, if one was to be inspired by that kind of phosphene vision to mark a particular artifact with a design inspired by it, that would be a *sinsign*. If we found a unique example, then that would be one individual occurrence. Humans, and this is where reflexivity comes in, are distinctive, according to Peirce, in their ability to create *legisigns*. *Legisign* is law, and it is the systematic organization of signs into pattern and systems that he is talking about. If one has the inspiration, from something as basic and almost non-semiotic as the impression of light on the closed eyelids, to create an individual element, and that individual element is picked up and copied or reproduced again by the same individual or by others, then you have the potential to move into a *legisign* level representation.

What I think is so interesting about the semiotic approach that you are taking, and using the nuance of the vocabulary that Peirce offers, is to think about how reflexive uptake and reflection upon individual motifs can

generate pattern. In a way, it is just a terminological point because it is a way of getting at how we classify things. I think it is really positive to move beyond the symbol, to icon, index, symbol. When you do that, then you get this whole host of other ways of talking about semiotic processes, of other ways of looking at signs, not in terms of their means of representation, but their capacity for being semiotic at all, which is what that first trichotomy is about.

A larger point is to say that, in the Peircean view of semiotics, the symbol is really not the most important or highest order of semiotic representation, necessarily. Really, it is the *legisign*. The *legisign* is a way of talking about signs regardless of the symbolicity, iconicity, or indexicality. In fact, linguistic anthropologists for a long time have talked about how most of language practice is not symbolic but indexical. What is important is that indexicality in language use is organized at the level of *legisign* representation. This is all splitting hairs for people who do not care so much about the vocabulary. Yet it is a way to get around the fetishization of the symbol and the debate over whether it is a symbol or not. Well, it does not matter. Maybe it is just a *legisign* and this is just a way of saying that the level of semiosis we see, there is a pattern there. Whether or not it is symbolic pattern or some other kind of pattern does not always matter. It is the fact there is pattern, and the pattern is a reflexive product of engagement with some kind of habit, and this is accomplished in communities of people together, this is really what the point is that Peirce was trying to make.

Ben Campbell:

As an ethnographer who works with living, breathing, human communities in the present, I am really interested to know how much we know that we do not know. If one was to work with a living, breathing, doing, engaging, interpreting community, what sort of evidence would you look for in that community, as opposed to what you have got the evidence for? I am thinking about singing, about weaving or cross-hatching, and saying well, I don't know, I think there is something going on there. It is probably about materials, which would have rotted within a few months of the putting together, and not lasted 400,000 years.

You do, at the end, ask questions about how people perceive and experience the world. And I was reminded what sorts of aspects of life would be missing from the archaeological record. I went to one of the caves in the Pyrenees. You have all these images so oddly made, accompanied with singing, and so much acoustic information, as well. I just wanted to throw that into the void.

Susan Blum:

I am a little uneasy with the idea of discussing the evolution of ‘wisdom.’ While I am intrigued by the sound, and am challenged by thinking about what this means, for me the very term automatically smuggles in positive evaluation. *Wisdom* always is good. As I understand the term, there can be no bad wisdom, though there can be bad *knowledge*, such as knowledge of things like warfare, or weapons, which I think many would agree are anything but good. (I understand that in ancient Greek, the term may have different valences, and this might endure in theology, where one might contrast *sophia* and *phronesis* but I inhabit a world of contemporary English usage, where the word includes connotations of sagacity, insight, and the right path. *Knowledge* may be neutral, but *wisdom* cannot be.)

I also wanted to say something about learning and the transmission of knowledge or wisdom, depending on what term you decide to retain. Learning and transmission occur in all kinds of ways in all attested human societies, as anthropologists have shown (Bock 2010). Apprenticeship is one way (Rogoff 1990), but there are a wide variety of other forms of transmission and reception, some of which are explicit and verbal, and some of which are neither explicit nor verbal. Some human novices (not only the young) learn by observation: They observe, observe, observe, and then one day are able to produce the action, without ever having been taught or tested (Lancy 2016). This knowledge appears just to emerge, but after long involvement in meaningful social relations (Gaskins 2008, 2013; Gaskins and Paradise 2010).

Sometimes there is trial and error, without any supervision. No elder, no supervisor is making sure that a child is doing something, but maybe she, as a novice, is trying things on her own, and then she will get better and better (Lancy 2010). Sometimes – but not inevitably – there is play (Chick 2010). Small people often play with small versions of tools, or small versions of objects, and then they graduate into bigger versions of it. Then, sometimes there is actual pedagogy (Hewlett et al. 2011). And the unit of analysis of learning may not, properly, be an individual but could extend (be distributed) over the social group (Hutchins 1995). These are all things to keep in mind, when we wonder how the transmission is possible. Language may or may not be required for all of it, though it is obviously required for the explicit kinds of teaching.

Which brings me to the other stuff that is not evident in the record. Song, the voice, and all of that are clearly not retained in the physical record, but there is also movement, dance, proximity, touch, all these things that are part of our human activity in the quotidian – none of that would be evident there,

either. We approximate it by observing material practices such as burial, but that is really a very extreme version of what humans everywhere do in our everyday life.

The final point I wanted to pick up on is the question of what makes someone a full human. This has been a real focus of inquiry for psychological anthropologists, in particular, people like Meyer Fortes who showed the Tallensi view that full humans were, prototypically, healthy adult males married with children (Fortes 1987). Everybody who deviates from the ideal is slightly less fully human.

In our society, we have been trying to figure out exactly who counts as human – as a person – and who does not. We have added to it more and more: children, infants, fetuses, cyborgs. We have added to the point that chimps are human now, sort of, for some people. Corporations are legal persons. Robots, too. We are extending the idea of personhood very broadly, much more broadly than would have been extended 200 years ago, in most societies of the world. At the same time, some ‘persons’ who are honored and acknowledged in some societies – gods, ghosts, ancestors, to take the Chinese formulation (Jordan 1972) – are ignored by many in secular societies. The question of the nature of human persons intersects completely with your project because the range of investigation presumably extends completely, but only to those considered human persons.

Celia Deane-Drummond:

This is a footnote to Susan Blum’s comments, which I think are very interesting. Maybe I should point out that, if you go back to the Hebrew Bible, when it talks about the snake, it is represented as having a distorted form of wisdom, *‘ārûm*, or ‘cunning.’ The snake is created by God, as are humans. The implication of the text is that the first temptation is actually to misuse wisdom, and that is the origin of sin. Therefore, I do not think wisdom necessarily has this ‘goodness’ trope inevitably fixed with it, any more than cooperation has the goodness trope fixed with it. Unfortunately, authors like Frans de Waal assume cooperation has always been good; he has a naturalistic ethic. Wisdom, as such, can still be ambiguous. It is the way it is used when attached to divine wisdom that is the ‘goodness’ version, as it were; divine wisdom is the ideal. There is still the option of wisdom being used or distorted by creatures, or having a form of it that leads to what we would call evil acts. There is a judgment when we speak of wisdom, but you do not have to make that judgment as aligned to goodness when using that language. This is why I think the language of wisdom, from an evolutionary

anthropological point of view, can still be helpful, because you are not making prior judgments about whether this is a particular moral act or not. There is still a measure of ambiguity, as long as you define the terms clearly enough, in the same way that collaboration can be for things we would maybe see as not helpful, collaboration for warfare and so on. Wisdom of a kind can be used for those things, as well.

Author Responses:

We thank all of the members of the colloquium for their invaluable thoughts and comments on our paper. Chris Ball's suggestion of looking at the capacity of these objects to be semiotic, rather than concentrating on the sign-object connection, is insightful. Re-reading Peirce, we agree that the first trichotomy of *qualisign*, *sinsign*, and *legisign* is more applicable in the archaeological context than the more famous icon, index, and symbol. As much of communication is indexical, privileging the symbolic may be concentrating too much on only one aspect of semiosis. We may never know if scratches on ochre tablets are signs in a Peircean sense, but we can ask if there are *sinsigns*. A more detailed study of the motifs from Diepkloof cave may allow for the recognition of *legisigns* through studying specific motifs.

Ben Campbell reminds us that we need to be aware of what is missing from the archaeological record. The idea of music is intriguing and reminds us of Steven Mithen's *The Singing Neanderthals* (Mithen 2005). While the earliest well-accepted flutes date to the early Upper Paleolithic (Conard, Malina, and Münzel 2009), other forms of music-making could have been common in the past, such as instruments made of perishable materials. Singing itself may have a more ancient origin than is often supposed. Furthermore, much of the behavior of these early humans that could be seen as symbolic or imaginative would have been destroyed by taphonomic processes. While the Clacton and Schöningen spears are a notable exception, most of the wooden artifacts used by humans in the Pleistocene surely did not survive. Furthermore, we are only recovering the small amount of data that is found within archaeological sites. We also need to be aware of how research questions drive much of archaeological inquiry. If you do not expect to find incised lines on artifacts associated with non-modern humans, it is unlikely that they will be found. Many early archaeological excavations only collected complete bones, biasing the record immensely. On a more positive note the ~500,000 year old engraved shell from Trinil was discovered a century after its initial excavation. We hope scholars can use these examples as the starting point to reexamine older collections with new questions.

We agree with Susan Blum that the concept of teaching and apprenticeship has been underplayed in human evolution. Kim Sterelny's work touches on this aspect of niche construction and we welcome the idea of incorporating it into our model (Sterelny 2012). As Blum notes, the idea of wisdom is not something that many anthropologists have embraced. However, its use might engender thinking differently about these complex issues. Incorporating the EES into human evolutionary models requires rethinking many of the standard assumptions about genetic fitness and the evolution of cooperation and altruism. Celia Deane-Drummond reminds us that wisdom can lead to evil acts as well as good ones. Other papers in this volume speak to this issue directly. Removing the idea of 'modernity' and replacing it with wisdom allows anthropologists to embrace a more complicated version of the role human creativity, imagination, and symbolic thought played in the process of the humanization of hominins.

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Book Reviews

Joshua M. Moritz. *Science and Religion: Beyond Warfare and Toward Understanding*. Winona, MN: Anselm Academic, 2016. 317 pp.

Science and Religion provides a current and expansive introduction to the relationship between science and Christian theology. Moritz's book specifically seeks to demonstrate how "the narrative that science and religion are at war is a *myth*" (8). This popular myth, accordingly, arose from an anti-religious worldview and cannot be supported by careful historical analysis. Apparent conflicts between science and religion, therefore, have not emerged directly from the data, but rather from a skewed interpretation of history, science, and religious texts (17).

To develop this case, Moritz covers a wide range of issues, including a historical overview of the alleged conflict between science and religion, an examination of the role religion played in the development of modern science, a concise examination of philosophical approaches to the demarcation of science, and an outline of the intersections between Christian theology, modern cosmology, biological evolution, and anthropology. In addition to these common issues, Moritz also explores the ostensible tensions between various concepts of miracles and the laws of nature, evolution and the problem of natural evil, and scientific perspectives regarding our cosmic future versus eschatological perspectives that find ultimate hope in the physical resurrection of Jesus (280). While broad in scope, *Science and Religion* brings an appropriate amount of depth to each of these topics.

Moritz's opening chapter summarizes the history of Thomas Huxley, John Draper, and Andrew White's attempts to secularize the scientific establishment by spreading the message of the war between science and religion (22). He specifically notes that Draper's book, *The History and Conflict Between Religion and Science*, and White's book, *A History of the Warfare of Science with Theology in Christendom*, promulgated this warfare message¹. Later

1 Draper, John W. 1874. *The History and Conflict Between Religion and Science*. New York: Appleton; White, Andrew D. 1896. *A History of the Warfare of Science with Theology in Christendom*. New York: Appleton.

historians of science, however, demonstrate that neither Draper nor White were concerned with sound historical scholarship, but instead were influenced by their political and anti-religious ideologies. Nevertheless, their warfare thesis continues to instigate popular misconceptions about Columbus proving to Christians in the European Middle Ages that the world is round, Galileo going to jail due to his scientific defiance of the Catholic Church, and false notions that the Scopes Monkey Trial was a science versus religion legal case. Myths abound when it comes to the historical conflict between science and religion, and Moritz successfully undermines the credibility of such myths.

Moritz then retells the story of how Jewish and Christian theology actually gave birth to modern science. He explains how particular theological insights produced foundational philosophical assumptions, such as the idea that there are laws of nature, and that these assumptions provided both the motivation and conceptual framework for scientific investigation (40). He cites Aristobulus of Paneas, Yeshua ben Sirach, Basil of Caesarea, Ambrose of Milan, John Philoponus, and John Buridan as theologians who promoted the idea of universal laws long before the scientific revolution (41–42). He further highlights how Buridan's theological work directly influenced Galileo, Descartes, Newton, Boyle, and other early modern scientists (42). As the scientific revolution continued, Moritz presents the case of how Christian theology remained influential for eighteenth-century geology, nineteenth-century biology, and twentieth-century cosmology (55). Thus, science has always had a close relationship with religion.

To look more closely at eighteenth-century geology, Moritz covers how ideological debates among early geologists influenced their scientific research. Charles Lyell, for example, had a philosophical commitment to Aristotelian eternalism, and thus denied that the stratigraphic record showed a progressive trend (48). Christian geologists like Nicolaus Steno and William Buckland, conversely, argued from a biblical perspective and suggested that history moves in a direction. Steno's and Buckland's perspective – historical progressive geology – predicted that younger strata would contain fewer or less developed fossils, whereas Aristotelian eternalism anticipated a world where life has always existed (47–48). Historical progressive geology was eventually confirmed, and thus the Bible made a positive influence on geology.

Moritz's textbook further includes a brief summary of the demarcation problem within the philosophy of science. His treatment contains explanations and critiques of Baconian inductivism, Hume's problem of induction, Hempel's logical positivism, Popper's falsification principle, and Kuhn's

paradigm insights. After analysis, Moritz concludes that science consists of three basic components: empirical data, explanatory theories, and non-empirical shaping principles (66). Of these three components, he contends that the necessity of non-empirical shaping principles emphasizes the role of faith in science, since there is no way to choose between competing principles in “an absolutely logical or *purely scientific* way” (67). Consider the necessary assumptions of science below (69–71):

1. The world is, in some sense, good and therefore worthy of careful study.
2. The world is orderly and rational.
3. The order of the world is open to the human mind.
4. The order of the world is contingent rather than necessary.
5. Metaphysical realism is true.
6. The physical universe is uniform.

Such assumptions are not grounded in empirical observation. One should presumably recognize, therefore, that science depends upon values and principles that are not the result of scientific discovery or testing (67).

The relationship between science and faith goes both ways, however. Moritz additionally contends that the Christian faith needs science, specifically because historic Christianity affirms the doctrines of creation and general revelation. One cannot discover the full content of the Christian faith, then, without a commitment to scientific investigation (79). Moritz explains:

The Christian faith ... needs science to better understand and talk about who God is and what God does in the world. For example, when Christians confess that God is ‘eternal,’ one might reflect on how God’s eternity is defined in relation to time. Furthermore, whose concept of time is being employed? Is it Aristotle’s or Augustine’s subjective view of time; Newton’s notion of objective or absolute time, which exists independently of motion or change; Einstein’s relativistic understanding of time as another dimension of space; or, perhaps, the concept of two-dimensional time from contemporary string theory? (80).

This paragraph highlights an essential overlap between theology and science. To properly understand theology in modern context, theologians must reflect on the various discoveries of modern science.

Perhaps the most significant scientific progress related to Christian theology comes from issues associated with Big Bang cosmology and biological evolution. Moritz notes that many Christian believers, such as Georges Lemaître, Hugh Ross, Robert John Russell, and William Stoeger, have been able to reconcile the Big Bang and the doctrine of creation. He further writes that Asa Gray, Louis Agassiz, Alfred Russel Wallace, Sir Richard Owen, and St. George Mivart were all religious and supporters of evolution. Gray, for

example, was an evangelical botanist who was largely responsible for the “early success of Darwin’s theory in the United States” (97). Moritz’s retelling of this history underscores how seemingly contentious scientific ideas were not initially controversial for religious believers.

The strongest aspect of *Science and Religion* is that it provides a convincing and current explanation of biological evolution. Moritz introduces readers to many substantial debates on evolutionary thought, such as horizontal gene transfer, symbiogenesis, differential lineage sorting of genes, and evolutionary developmental biology – often called ‘evo-devo.’ He then offers suggestions for how one might incorporate these scientific insights into a comprehensive worldview. Most monotheistic religions, for example, affirm that God is the creator of life. Biological evolution does not undermine this affirmation, but it causes theologians to clarify *how* God was the creator of life. Special creationists might argue that God directly created various life forms, but Moritz shows that this assertion does not coincide with the scientific evidence. Christian theologians, therefore, should reject special creationism and clarify that God creates life indirectly through natural processes (140).

Of course, this brings up the issue of human uniqueness. If God creates indirectly, then are human beings simply an indirect by-product of the evolutionary process? This might be the most controversial question addressed by theologians who take evolution seriously. There is an understandable concern that human evolution challenges the claim that humans are unique and distinct from the lower animals. Moritz responds to this concern by arguing that the creation stories in Genesis offer the same challenge. Genesis, according to Moritz, underscores Adam’s connection to other animals more than it elucidates his distinctions (180). Ancient Jews, it would seem, were less concerned about the uniqueness of human beings, and more concerned about the uniqueness and greatness of their God. Even for matters pertaining to sin and redemption, Moritz argues that the Scriptures focus on God and the redemption of the entire creation. The eschatological hope for Christianity, therefore, is not merely an individual hope, but a collective hope.

There is much to praise about *Science and Religion*, although the book does have a potential drawback. If you are expecting a textbook that deals with science and religion broadly, this is not it. *Science and Religion* specifically covers the relationship between science and Christianity, and Moritz only briefly considers other religions. His treatment of other religions, furthermore, is designed as an apologetic for the Christian worldview. For example, he argues for a harmonious relationship between biblical creation and the scientific discipline of cosmology (108), but does not seek to

reconcile science with other religions. He does mention the creation stories within ancient Mesopotamia, and he does briefly discuss Hindu and Buddhist cosmogonies. When he does this, however, he does it to highlight the uniqueness of the *creatio ex nihilo* doctrine.

Moritz's book, then, is an attempt to resolve apparent tensions between Christian theology and the natural sciences. He devotes chapters to the Bible and miracles, evolution and natural evil, and to exploring the relationship between the resurrection of Jesus and our final eschatological hope. If you are looking for a broad introduction to science and religion, then Moritz's text is not the best option. If you are looking for a Christian-focused textbook, however, then Moritz offers a compelling and useful introduction to the relationship between science and religion.

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Peter Harrison. *The Territories of Science and Religion*. Chicago; London: University of Chicago Press, 2015. 320 pp.

It is a widespread prejudice that religion and science are in deep conflict. This alleged conflict rests upon the assumption that both science and religion entail propositions about the nature of reality that contradict each other: Scientific and religious claims, it is often argued, can both be false but they cannot both be true. To deal with this apparent conflict, two options are available: Either one fully endorses the conflict and takes a stand on a particular side of the divide or one elaborates a theory in which this conflict is sublated in one way or another. The first option, which is arguably undertheorized, leads to the familiar variety of fundamentalist positions that has creationists on one side of the battlefield and the new atheists on the other. The second option is based on a more reflective stance on the relation between science and religion. It includes a variety of methodological approaches of which the philosophical and the historical approach are the most relevant ones.

The philosophical approach is based on metaphysical and epistemological reflections regarding what science and religion actually are safe to assert about the nature of reality. It reflects upon the logical status of religious and scientific claims, their justification, interrelation, and integration into broader systems of belief known as 'worldviews.' On this account, the

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conflict that commonly is addressed as the conflict between *science* and *religion* often turns out to be metaphysical disagreement concerning the plausibility of a *naturalistic* worldview that only accepts scientific methods and theories, compared to the plausibility of *theistic* worldviews that accept methods of obtaining knowledge other than those used in the sciences.

In his *The Territories of Science and Religion*, Harrison is not interested in the philosophical approach. Instead, he chooses to shed light on the relation between science and religion by illuminating the conceptual history of the modern English terms ‘science’ and ‘religion’ that etymologically originate from the Latin *scientia* and *religio*. His main thesis is as follows: Those who argue that there is a *perennial* conflict between science and religion throughout the history of Western thought deploy the terms ‘science’ and ‘religion’ in a way that anachronistically obfuscates and ignores historical and systematic connotations that lay the very foundation for our modern concepts of religion and science. They create, in other words, a myth that is unsupported by historical evidence.

According to Harrison, it is not true that there could have been a conflict between science and religion in Western intellectual history before the 19th century for the reason that European culture lacked the conceptual resources necessary to formulate this conflict as it is understood today. As Harrison says, “modern religion had its birth in the seventeenth century; modern science in the nineteenth” (147), so “the idea of a perennial conflict between science and religion must be false” (5). Until the 17th century, *scientia* and *religio* used to refer to virtues and habits of those engaging in intellectual activity or liturgy. They denoted a mental habit of reasoning, respectively an inner piety. This can be seen paradigmatically in Thomas Aquinas. According to Harrison, for Thomas,

science is an intellectual habit; religion, like the other virtues, is a moral habit. There would then have been no question of conflict or agreement between science and religion because they were not the kinds of things that admitted those sorts of relations (16).

The traditional understanding of *religio* and *scientia*, however, did not survive the demise of the Aristotelian worldview in which it was rooted. Although several factors led to the emergence of our modern concepts of science and religion, one common cause “is that the prevailing Aristotelian model of virtues – understood both as moral qualities of the individual and as inherent propensities of natural bodies – was called into question” (84). It is, on Harrison’s analysis, the 16th and 17th century that sees the emergence of a twofold process of externalization of the Aristotelian model of virtues and dispositions. The essential feature of this process is a shift from dispositions

and virtues to the formulation of laws of nature and laws of conduct. First, virtues were no longer understood as habits of the character of a person but “were often redescribed in terms of whether they yield behaviors that accord with positive laws” (90). Second, the idea of dispositions of natural kinds as a legitimate source of explanation of their causal behaviour was replaced by the idea of divinely sanctioned, contingent laws of nature regulating their behaviour: “These laws of nature were not descriptive of relations among the properties of objects, but rather of divine volitions” (79). Since laws of nature and laws of conduct both express propositional content and therefore are apt to be expressed in systems of propositions, “*scientia* and *religio* took on new meanings, and were increasingly associated with systems of thought and belief in the familiar modern sense” (92).

Although religion and science came to be understood as systems of belief, this does not fully explain the possibility of conflict between them. In order to grasp the root of this apparent conflict it is necessary to reflect further on the idea of divinely sanctioned laws of nature: If these are the only causally relevant factor in explaining the causal nexus of the universe, then the traditional distinction between natural causes in the world and God as a supernatural cause collapses into a univocal concept of causation. According to Harrison,

in this collapse of the distinction between natural and supernatural causation lay the seeds of a thoroughgoing naturalism, for once divine activity was placed on the same level as natural activity the operations of nature could be understood as having either divine causes, or natural causes, but not both at once (80).

As Harrison continues to argue, “the ultimate effect of this flattening of the scope of ... causation was that modern science and theology would come to occupy the same explanatory territory, and this established the conditions for competition between them” (80).

Harrison’s *The Territories of Science and Religion* is an excellent book that should be compulsory for anyone interested in the alleged conflict between science and religion. It is well written and clearly structured. Harrison convincingly traces a coherent conceptual history of our modern notions of science and religion, mentions important historical turning points in the development of these terms and shows how they ended up as systems of propositions about reality that can be said to be in conflict with each other. He makes a convincing case for the conclusion that

science and religion are not natural kinds, they are neither universal propensities of human beings nor necessary features of human societies. Rather they are ways of conceptualizing certain human activities – ways that are peculiar to modern Western culture, and which have arisen as a consequence of unique historical circumstances (194).

Despite the overall plausibility of *The Territories of Science and Religion*, there are two points that I wish Harrison would have addressed in more detail. One is philosophical and one is theological.

The philosophical point is that although Harrison refers to important turning points in the development of our concepts of science and religion, he does not reflect sufficiently on the philosophical reasons that motivated these turning points in the first place. For instance, although he states that there was a shift away from dispositions of natural kinds to laws of nature, and away from moral virtues to laws of conduct in the 16th and 17th century, he leaves the reader wondering what philosophical reasons supported these changes. Since, however, Harrison's interest is primarily a historical and not a philosophical one, this critique could be seen as an implicit compliment: The reader would have liked to hear about Harrison's evaluation of the reasons behind the historical processes.

The second point I was not entirely happy with, this time from a theological point of view, is that Harrison seems to underrate the historical importance of the propositional content of faith. There have been important debates and discussions concerning the propositional content of what it is that Christians are obliged to believe – discussions, that is, concerning the propositional content of the Christian religion – long before the rise of the 17th century. This is sufficiently witnessed by the councils of the church from the 4th century onwards. For instance, the doctrine of the hypostatic union of the divine and human nature of Christ was recognized at the First Council of Ephesus after controversial metaphysical and soteriological discussions. These discussions were not primarily discussions of the proper form of worship of the divine – that is, they were not about questions concerning proper *religio* – but primarily had to do with the propositional foundations of Christian faith as a worldview to live by and to be defended against objections. Contrary to Harrison's thesis, then, it seems, first, that there has always been a crucial and essential element of Christianity that exclusively dealt with the justification and clarification of the doctrines of Christian faith and, second, that people have been aware of their faith as a particular system of propositional belief long before the 17th century. But perhaps I am mixing up 'faith' and 'religion' here.

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Brent Waters. *Christian Moral Theology in the Emerging Technoculture: From Post-human Back to Human*. Farnham: Ashgate, 2014. 270 pp.

In this book, Brent Waters continues his critical engagement of the contemporary culture, focusing here on technoculture. The book is divided into three closely argued parts. Part I discusses Friedrich Nietzsche and Martin Heidegger to define the conditions of late modernity, particularly the negatively marked features of nihilism and historicism. In addition, Waters draws on George Grant, Hannah Arendt, and Albert Borgmann who, because of their lack of a theological foundation, all turn out to be insufficient for the appropriate understanding of technology. We are all imprisoned by technology, and late modern individuals are losing their essential 'human' characteristics. Waters argues that we should name the situation correctly and acknowledge that the present age is the age of 'darkness.' According to Waters, some corrective is needed: a proper Christology/theology, and, following Borgmann, 'focal practices.' "A focal thing is an objective reality which exerts a 'commanding presence' and 'continuity with the world,' a world, it should be stressed, that is not a manufactured artifact, device, or commodity" (89). Examples of focal practices include family dinner and church as a community, the latter involving focal practices of Baptism, Eucharist, and Sabbath along with "their corresponding virtues of faith, hope, and charity" (188). Waters sees focal practices as places where we can redirect our desires, our will to power, our historicism, our nomadic and irresponsible travel-lust, our predatory consumerism, etc.

Brent Waters does discuss several important thinkers who all add significant dimensions to Heidegger's thesis that the more humanity appropriates and accustoms itself to new technologies and tools, the more human existence itself is 'enframed,' and the nature of technology as cultural artifact is obscured. But other important philosophers of technology and researchers in science and technology studies never seem to deserve a mention (e.g., Don Ihde, Langdon Winner, Donna Haraway, Bruno Latour, Andrew Pickering, and many others). This omission can be explained as Brent Waters' attempt to avoid the attention to the actual technologies and our daily engagements with these – as he finds technologies can be hardly anything but alienating – in order to offer a Christian approach to technology. Brent Waters insists that he is not a Luddite (4), but he repeatedly finds fault with "constructing and reconstructing the physical and virtual spaces" (191), in short, with creativity in general and particularly creativity in technology or with the help of various new technologies. Creating new uses or new meanings for our technologies does not serve his vision for technoculture. Rather,

he pays close attention to Grant's emphasis on the 'darkness' or tragedy of the human condition and Arendt's focus on natality (rebirth) as correctives to the hubristic quest for immortality and transcendence over nature through technologies. Waters claims that modern societies have settled into the belief that God is dead, and their appreciation of innovation and human co-creation explicated either theologically (e.g. by Philip Hefner or Gordon Kauffman whom Waters criticized extensively in his earlier book²) or non-theologically (science and technology studies) is a clear sign of the frightening 'emerging technoculture.' The designation 'emerging technoculture' seems to indicate that technologies were good or at least tolerable up to a certain point in history but that now, or in the foreseeable future, technologies will change us (they will demand that we learn new things and new ways of doing old things) and will change our societies. But is this need to reinvent ourselves and to reorganize the social fabric anything new? At least since the dawn of agriculture, humans have radically changed their previous habitual ways of conduct, use of space and time, obviously also their religious and moral convictions. New economical formations come hand in hand with new technologies, new family patterns, new ways of personal ideals and disciplines, etc. Reinvention and redefining how human life should be lived has happened through all centuries, even if the present rapid change is stressful for many.

In Part II, Brent Waters offers an alternative normative position, building on his philosophical critique. Firstly, "confessing darkness as darkness" (116) is needed. For critical confession, Waters develops concepts of judgment, hope, and grace. Confession leads to repentance (distancing oneself from the technoculture). The envisioned rebirth is coupled with forgiveness and the new life is oriented toward natality, following Arendt. The Christian moral life is thus lived out between the Ascension and *Parousia*. Navigating the moral terrain in this time between the times is an inexact and perilous enterprise according to Waters, but not devoid of any guidance. There are reliable landmarks that can be used to plot a course and trajectory toward the proper human end or *telos* in Christ. The pilgrims of the heavenly city are simultaneously pushed by an anticipatory remembrance and pulled by an imaginative restlessness toward a promised destination beyond the horizon: hence, the eschatological and proleptic orientation of the resulting narration of natality (150). Waters calls for the adoption and application of Borgmann's focal things and practices to keep oneself on this new moral trajectory. Christian pilgrims, contrary to the nihilistic nomads, can

2 Waters, Brent. 2006. *From Human to Posthuman: Christian Theology and Technology in a Postmodern World*. Aldershot: Ashgate.

employ a technique called “dead reckoning,” used by marines and pilots of old, in order to navigate their journey (135). This image refers to a pilot flying through a storm toward the destination of an imagined horizon without the aid of precise charts or instrumentation – the eschatological horizon. This eschatological horizon found in Christian narration is Christ’s *Parousia* which will always remain eternally distant. While Christians do not know precisely where on the horizon they should be aiming, and they often encounter confusing landmarks and bad weather, they can still rely on God’s promise that there is a destination (136). Besides, Christians have at their disposal the travel logs and journals of their ancestors in the faith. Thus, according to this image, Christians are pilgrims who relate their mobility to the eschatological trajectory and to Christian narration, contrary to late modern nomads who create their narratives while on the go to self-selected destinations.

Late modern nomads (all those who don’t share this particular Christian view) envision the future as either an artifact of their will or an inescapable fate (150). The nomadic life of the earthly city is one of either willful or resigned mastery. Although these orientations are contradictory, they both reflect a fundamental fear of the future (150). In many other instances, Waters laments late modern nihilism and historicism. Historicism seems to mean not healthy knowledge of historical developments but rather unholy denial of eternal essences, permanency, and *telos*, the end that one knows thanks to the Christian narrative. If historicism rules, then one is ripe for the idea of a history of endless becoming, or, God forbid, even progress. Modern humans are not capable of moral reasoning because they prefer nomadic values of space, information, and exchange, instead of Christian narration and concrete communal places, i. e. churches, where this narration is enacted and communicated.

The Christian pilgrims according to the author are not outside of emerging technoculture but neither are they at home here. Waters is clear that not all is well in the emerging technoculture (there is hardly anybody who would not agree!), but argues, “The remedy, however, is not refusal, which for all practical purposes would offer little more than nostalgic escape. This is especially the case for Christians, for refusing the emerging technoculture would also be to refuse God’s creation – a refusal to understand and serve the thing as it is” (194).

This is a remark which somehow does not fit the overall tone of the book. The author is a contemporary man and apologizes that he himself and his main philosophical and theological sources are inhabitants of academic ghettos (189). He does not want to provide detailed instructions but rather

uses rhetorical tactics of suggestive speech (188). The book is well argued and helpfully structured, with frequent summaries of previous chapters. Yet it is hard to see how, according to this book, one could detect or imagine God's presence and continuing creation amidst our daily experiences with technologies. It is also to be doubted that engineers or IT-specialists will recognize their work and creative solutions as adequately represented. Are the 'will to power' and nihilism the only ways to describe the late modern situation? Should we not remember those who need power to be at all, and power to become, i. e. the empowerment of those whose historical experience has been disempowerment? Since when did mastery lose its meaning as skillfulness and ability to use, understand, and also interpret technologies in their details and our experiences with the ubiquitous technologies?

Waters finds refuge in the sacraments: "The language of baptism is a commanding presence within the space created by the church that is gathered in its Lord's name. ... The physicality of the act reinforces the requisite necessity of embodied presence in real time and shared place" (201). The Eucharist is

a paradigmatic focal thing and practice, exemplifying the pattern and trajectory of the Christian moral life. The ritual performance of judgment, confession, contrition, repentance, forgiveness, amendment of life, and absolution simultaneously embodies, reinforces, and enacts the central scriptural and doctrinal precepts that form the Christian moral life, and this formation in turn is inexplicable and ineffectual in the absence of the church's narration of its four marks noted above [one, holy, catholic, apostolic; AK]. Ordering one's life and the life of the community to the focal practices of Eucharist is to also order accompanying desires and hopes to the church's narration of the gospel, both in terms of remembrance and expectation (224).

However, can the ritual and doxological performances really guide our moral orientation to the eschatological *Parousia* with the same urgency and compellingness that is achieved daily by the presence of embodied neighbours and strangers?

How do we stay true to the confused and contorted experience of the late moderns without trying to streamline them or straighten them up in a particular way? One step would be not to apply one single story as a solution. Two focal communities – family and congregation – are by definition partly chosen and partly given as a fate. Both have notable trouble with the other who does not belong, the stranger, either in the form of pilgrim or nomad. It is trivially evident today that none of us can live just moving between two focal places – the family kitchen and church. It is evident as well that common experience is not waiting for anybody to give meaning to the experience. Neither is it formless plasma to be given shape by philosophers

or theologians. Our contemporaries are all actively creating their meanings, their interpretations. It's not easy for a theologian or a philosopher to admit that maybe his or her work really matters just to a subculture.

Waters' thesis that Christians should engage the emerging technoculture "by preserving the necessity of place, narration, and communication in a culture that is tempted to replace them with space, information, and exchange" (229) is attractive in many ways, but in the constructive parts of the book technologies do not play any positive role. In the end, the focal practices and focal communities are not centered on technology (advanced or not) but instead require distancing oneself from technologies (with the exception of cooking). Thus in the end, one can say that technology has been rather an alibi to conduct a well written and tightly argued condemnation of contemporary culture and promote a theology with an emphasis on traditional, dogmatic views, and implicit warnings against any novelty and creativity in theological interpretation. Ironically, this move expels God from theology and daily experience. Passive waiting for the *Parousia* does not provide a new Christian and moral engagement with technology.

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Eduardo Kohn. *How Forests Think: Toward an Anthropology Beyond the Human*. Berkeley: University of California Press, 2013. 267 pp.

Drawing from a variety of sources and extensive ethnographic/naturalistic data from his time spent in Avila, Eduardo Kohn attempts to rethink anthropology beyond the human in this interdisciplinary book (6). It is an ambitious task that must navigate between the dangers of claiming that we can't say anything at all about the rest of the natural world (a complete Cartesian split) or that we can know the rest of the natural world just as it is (a sort of phenomenological identification with the rest of the natural world). Kohn argues that if humans are indeed embedded in an "ecology of selves" (117), then an anthropology beyond the confines of the ever-shifting human species is not only possible but necessary. As a religious studies scholar, I think this book offers some rich methodological suggestions for how we might take religious phenomena seriously without reducing them to mere psychological projection or reducing them merely to some scientific cause. Here, I will briefly discuss some of these methodological components.

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The Ontology of Emergence. The work of Terrence Deacon is not new to religious studies, especially the scholarship that falls under the heading of 'science and religion.' The fact that the author seems unaware of that entire body of work, which Terrence Deacon has himself been involved in and which might enhance the author's engagement with the shamanistic and animistic religion of the Runa, takes nothing away from the valuable way in which he uses emergence theory to put forward a non-reductive materialism that pays attention to multiple levels of reality as really real. Emergence is, roughly, a theory that seeks to understand how more and more complex things come into the world, without introducing some type of Cartesian dualism or reducing everything to one side of the ideal-material spectrum. Kohn explains, "Emergent phenomena, then, are nested. They enjoy a level of detachment from the lower order processes out of which they arise. And yet their existence is dependent on lower-order conditions" (167). In a very important way then, language, thought, and meaning are very much "of this world" (16). If our own minds, languages, and meaning-making practices are of this world, nested within the ecological and evolutionary relationships we find ourselves in, then anthropology cannot just end at the boundary of the human species. We must examine the human in relationships with the rest of the natural world.

Our own thoughts are not, however, the world thinking, but they are the thoughts of humans embedded within the rest of the world. "Our thoughts are like the world because we are of the world" (60). This includes our religious, spiritual, and dreamed-for lives, which also shape the worlds around us, just as much as our everyday rational waking lives (which are actually shot through with these other dimensions). "The symbolic is a prime example of a kind of dynamic that Deacon calls 'emergent.' For Deacon, an emergent dynamic is one in which particular configurations of constraints on possibility result in unprecedented properties at a higher level" (54). In many ways our thought-patterns, like other things in the natural world, develop into habits that shape our becoming worlds toward certain ways instead of others. This (following Peirce) is how the symbolic holds a kind of non-efficient causal relationship in the ordering of bodies in the world. "Habits, regularities, patterns, relationality, future possibilities, and purposes – what he called thirds – have an eventual efficacy, and they can originate and manifest themselves in worlds outside of human minds. The world is characterized by 'the tendency of all things to take habits'" (*à la* Peirce) (59). It is not just humans that develop and adhere to these types of patterns and habits, but all life to some extent depends upon them. We exist in a world with multiple agents, made up of multiple perspectives.

A Multiperspectival Epistemology. This book joins a whole host of other works under the broad umbrella of the ‘new materialism’ not just in its attempt to take ideas and material together as equally real and affective, but also in its attempt to decenter the human as the definitive perspective from which the becoming planet is known. Kohn writes, for instance, “Semiosis (the creation and interpretation of signs) permeates and constitutes the living world, and it is through our partially shared semiotic propensities that multi-species relations are possible, and also analytically comprehensible” (9). From this perspective, humans are not the only meaning-makers and perceivers in the world. Growing out of the animistic traditions Kohn explores is a kind of perspectivism that permeates the sentient world. This type of perspectivalism or multiperspectivalism means that “all sentient beings, be they spirit, animal, or human, see themselves as persons” (95).

Complexifying things further is the fact that these multiple perspectives are also made up of selves that are not just isolated in single, individual bodies. “Selfhood can be distributed over bodies (a seminar, a crowd, or an ant colony can act as a self), or it can be one of many other selves within a body (individual cells have a kind of minimal selfhood)” (75). Hence, Kohn calls for an ecology of selves to understand this complex, multi-causal selfhood. Furthermore, it also means that there is no single understanding of “nature” (97). Speaking of jaguars, for instance, he writes: “From their I perspectives all beings see the different natures they inhabit as cultural: a jaguar – as an I – sees peccary blood as the manioc beer that is the customary staple of the Runa diet, and spirits, according to this same logic, see the forest as an orchard” (156). Or describing the trans-species communication between dogs and humans he argues, “In their mutual attempts to live together and to make sense of one another, dogs and people, for example, increasingly come to partake in a sort of shared trans-species habitus that does not observe the distinction we might otherwise make between nature and culture” (132). This means that just as there are multiple cultures, there are also multiple natures; and the ways in which nature-culture gets constructed, the ways in which meanings are made in a given world depend greatly on the ecology of selves co-constructing those worlds. This is true for humans, animals, plants, and the histories of selves that make up a given place forming what Kohn refers to as the “detritus” of history (183). We are able to reach out and understand these other perspectives through dreaming, shamanic/hallucinogenic experiences, and in other ways that “get us out of our habitual ways of becoming. Meanings – means-ends relations, strivings, purposes, telos, intentions, functions and significance – emerge in a world of living thoughts beyond the human in ways that are not fully exhausted by our all-too-human

attempts to define and control these" (72). Hence, we live in a world of open-wholes: selves, worlds, eco-systems, etc. that are whole, yet open toward others and the future of becoming.

Open Wholes. The Ecology of Selves. Building on the author's emergent ontology and multiperspectival epistemology, the crux of the author's anthropology beyond the human depends upon systems that are "open wholes" and can be understood better utilizing a method that examines the "ecology of selves." Kohn writes, "Learning to see the symbolic as just one kind of representational modality within the broader semiotic field within which it is nested, allows us to appreciate the fact that we live in sociocultural worlds – complex wholes – that, despite their holism, are also 'open' to that which lies beyond them" (223). In other words, selves, cultures, concepts, meanings, etc. are wholes open to other wholes and forever in a process of exchange, transition, and change. Selves, ideas, cultures, and other systems are (as mentioned above) dependent upon habits that form over time reinforcing certain ways of becoming in the world. Kohn writes,

A self, then, is the outcome of a process, unique to life, of maintaining and perpetuating an individual form, a form that, as it is iterated over the generations, grows to fit the world around it at the same time that it comes to exhibit a certain circular closure that allows it to maintain its selfsame identity, which is forged with a respect to that which it is not (76).

Much like identity formation in Butler's queer theory, Kohn argues here that self-organizing systems (open wholes), including selves, are formed through difference, but also through a process of subjection to these habitual ways of becoming (193). This is not an argument for a *Ding an sich* or irreducible difference, for as Kohn points out, arguing for irreducible difference "implies an opposite: that knowability is based on intrinsic self-similarity" (87). This also does not in any way imply full knowability of differences of others, as knowledge is always contextual and therefore multiperspectival.

Though Kohn does include non-humans and non-animal (and even non-living presences) in this multiperspectivalism, he, for reasons unknown to me, does argue for a difference between living and non-living selves/entities, arguing that only selves and not things qualify as agents (92) and that every living thing begins whole unlike machines (and by extension other abiotic entities) (64). This is a clear difference between Kohn and theorists such as Jane Bennett and Bruno Latour. I fail to see how Kohn maintains this distinction given his understanding of the "ecology of selves" which includes wholes open toward futurity as well as ideas/ meanings just as much as matter. Ideas and language, too, are technologies so how can he exclude machines from the realm of agents while at the same time including "spirits,"

“dreams” and “ancestors”? Further, by arguing that all life begins whole, a hint of the ‘original’ remains in his argument, which seems to go against his understanding of selfhood being extended over time and space, and against his idea that reality is multiperspectival through and through. I think the better argument, made by new materialists and science and technology studies scholars such as Jane Bennett and Bruno Latour, is that all wholes are parts, and all parts are wholes: Any individual is made up of a variety of parts that are in themselves whole, yet every individual is a whole and a part of others in an ever-evolving ecology of relations. From this perspective, one can understand better the ethical implications of this anthropology beyond the human, which centers on forgetting in order to take account of more and more perspectives / selves within the world.

Forgetting in Order to Become. Similar to process philosophy and theology, Kohn argues that selves become in a system that recapitulates the past while moving toward possibilities within the future (23). Our ordinary ways of becoming seem ‘natural’ because they are (again) habitual: Biological and cultural habits encourage us (and earth others) to become in certain ways and not others. However, because the ecology of selves is made up of open wholes, there is never closure in terms of how we are to become and there are always exceptions. These exceptions (as in the abjections of queer theory, traces of Derrida, or the repetition and difference of Deleuze and Guattari) continue to attract and eventually open us on to new ways of becoming (212). As Kohn notes, “We don’t usually notice the habits we in-habit. It is only when the world’s habits clash with our expectations that the world in its otherness, and its existent actuality as something other than what we currently are, is revealed” (63). Thus, the art of unknowing, the apophatic traditions found in many of the worlds religions and also in deconstructive philosophies are important for opening us up toward ever new possibilities for becoming.

There is no single nature any more than there is a single culture, and these exist in ever-changing combinations at any given time and place. “This emphasis on defamiliarization – coming to see the strange as familiar so that the familiar appears strange – calls to mind a long anthropological tradition that focuses on how an appreciation for context (historical, social, cultural) destabilizes what we take to be natural and immutable modes of being” (22). Anthropology, then, is already and always beyond the human because humans are embedded in this every-changing planetary ecology of selves.