Defending Adam After Darwin: On the Origin of *Sapiens* as a Natural Kind

Nicanor Pier Giorgio Austriaco, OP

Abstract. For many contemporary Christian theologians, evolutionary biology rules out any account of an Adam and Eve that would explain the origin of our species. In response, I propose that they have uncritically embraced the anti-essentialist presuppositions of the dominant scientific narrative for the origins of our kind. In fact, there are sound and robust reasons to think that human beings share an intrinsic essence that puts them into a natural kind. I also propose that our natural kind can be defined by our developmental capacity for language, which I suggest is needed for abstract thinking. Thus, it is still reasonable to trace the origins of our natural kind to an original individual. He would have been the first anatomically modern human to have evolved this capacity for hierarchical and non-linear language that allowed him to construct an abstract internal map of the world.

I. Introduction

In his recent book, *The End of Adam and Eve*, Protestant theologian Ron Cole-Turner argues that modern science has made the traditional account of a unique beginning for our species in an original human individual or an original individual human couple untenable: "According to the scientific version of genesis, on the other hand, the arrival of the first humans is not marked by sudden bursts or clear boundaries. . . . There are no faint lines, no lines at all, in fact, that mark the advent of the human, unambiguously distinguishing our kind from other kinds or announcing our arrival."[1]

Cole-Turner is not alone in holding these views. Catholic theologian John Haught would agree. In his book *God After Darwin*, he writes: "Obviously an evolutionary understanding of life cannot be reconciled in a literal sense with a story of a primordial couple, Adam and Eve, rebelling against God in the Garden

[1]Ron Cole-Turner, *The End of Adam and Eve: Theology & the Science of Human Origins* (Pittsburgh: TheologyPlus Publishing, 2016), 69.

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of Eden and passing down the consequences of their disobedience through our genetic history. The science of evolution cannot and should not be made to conform literally to the mythic biblical accounts and vice versa."[2] Both of these scholars reflect the current consensus among many contemporary Christian theologians that modern biology rules out any account of an Adam and Eve that would explain the origin of our species.[3]

In two earlier essays, I responded to these theologians by making theological arguments for the fittingness of the classical doctrines of the origin of our species and of original sin, even in light of developments in evolutionary biology.[4] Here, I would like to interrogate their philosophical assumptions: I propose that these theologians have been quick—too quick, in my view—to deny the possibility of an original human individual or an original human couple because they have uncritically embraced the anti-essentialist presuppositions of the dominant scientific narrative for the origins of *Homo sapiens* as a biological species. In fact, as several philosophers of biology have recently argued, there are sound and robust reasons to think that human beings have an intrinsic essence that is shared by all individuals who belong to *Sapiens*, understood as a natural kind.

I therefore affirm that we do not need to accept the anti-essentialism inherent in contemporary evolutionary accounts of the origin of our species. Instead, I propose that human beings have a distinctive nature and that our natural kind can be defined by our developmental capacity for language. In the same way that we are rational animals, we are also speaking primates. In fact, I propose that we are rational animals precisely because we are speaking primates, and vice versa. Thus, I claim that it is still reasonable to trace the origins of our species to an original individual. He would have been the first anatomically modern human to have evolved this capacity for hierarchical and non-linear language that he would have needed to construct an abstract conceptual map of his world. He would have been the first of our natural kind because he was the first speaking primate.

II. The Anti-Essentialist Argument

Though there are disparate accounts in the literature regarding what properly constitutes Aristotle's own understanding of essentialism in biology, the commonly held view among contemporary philosophers and biologists—the

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[2]John Haught, *God After Darwin: A Theology of Evolution* (Boulder, CO: Westview Press, 2000), 137.

[3]For example, see the recent anthology, William T. Cavanaugh and James K. A. Smith, eds. *Evolution and the Fall* (Grand Rapids, MI: Eerdmanns Publishing Company, 2017).

[4]"A Fittingness Argument for the Historicity of the Fall of Homo sapiens," *Nova et Vetera* 13 (2015): 651–67; and, "A Fittingness Argument for the Evolution of *Homo sapiens,*" *Science and Theology*, in press.

account inherent to what Mary Windsor calls the Essentialism Story—holds that Aristotelian essentialism is a theory that seeks to categorize living things by positing the existence of shared natures, defined by a set of shared properties, that puts individuals into natural kinds.[5] According to this account, the essential nature of an organism, specified by a genus and a specific difference, is a static and unchanging feature of that organism. Not insignificantly, according to this view, Aristotle also maintained that living things can be understood and clearly grasped by the intellect as things of a particular kind, distinguished from another kind by its essence or essential nature.

For the most part, contemporary biologists and philosophers maintain that essentialism, especially the natural kind essentialism commonly ascribed to the Aristotelian tradition sketched above, is incompatible with evolutionary biology.[6] Many different arguments have been proffered for this alleged incompatibility. In my view, however, there are four primary arguments.

First, essentialism about biological species implies species fixism. However, species fixism is inconsistent with the view that species evolve. As an example, wolves are wolves and dogs are dogs, and yet we know that dogs evolved from an extinct wolf lineage that lived thousands of years ago.[7] So, the anti-essentialists conclude, essentialism about species is inconsistent with evolutionary science.[8]

Next, essentialism maintains that a unique set of traits can be identified that together necessarily and sufficiently specify an individual as belonging to a distinct biological species. However, no such set of traits has ever been identified for any species. As an example, it is not clear if there is a trait or set of traits that would properly distinguish wolves from dogs such that the latter would always have these wolf-specific traits while the latter would not. In fact, these two canine populations share many common traits. According to Okasha, "virtually all philosophers of biology agree that . . . it simply is not true that the groups of organisms that working biologists treat as conspecific share a set of common

[5]Compare the two accounts of Aristotelian essentialism in David L. Hull, "The Effect of Essentialism on Taxonomy: Two Thousand Years of Stasis," *British Journal for the Philosophy of Science* 15 (1965): 314–26; 16 (1965): 1–18; and in Mary P. Windsor, "The Creation of the Essentialism Story: An Exercise in Metahistory," *History and Philosophy of the Life Sciences* 28 (2006): 149–74. For recent histories of the essentialism and species problem debate, see John S. Wilkins, *Species: A History of the Idea* (Berkeley: University of California Press, 2009); and Richard A. Richards, *The Species Problem: A Philosophical Analysis* (Cambridge: Cambridge University Press, 2010).

[6]For a representative of the consensus view, see Philip Kitcher, "Species," *Philosophy of Science* 51 (1984): 308–33.

[7]Adam H. Freedman et al., "Genome Sequencing Highlights the Dynamic Early History of Dogs," *PLoS Genetics* 10 (2014): e1004016.

[8]Among others, this argument can be found in Ernst Mayr, "Darwin and the Evolutionary Theory in Biology," in *Evolution and Anthropology: A Centennial Appraisal* (Washington, DC: Anthropological Society of Washington, 1959), 1–10.

morphological, physiological or genetic traits which set them off from other species."[9] In fact, evolutionary biologists have provided robust reasons for why we should *not* expect ever to identify these species-specific traits: evolution is always at work adding and eliminating traits within a population, and it is not clear that offspring lacking one but possessing all the other purported species-specific traits would lose their species membership. Evolution also tends to bestow common traits on unrelated species, i.e., species descended from unrelated ancestors, which are adapted to similar niches with comparable selection pressures. It is not clear why these individuals with common traits should not belong to the same biological species. Critics of essentialism note that both of these evolutionary trends would forever frustrate the essentialist's desire to uniquely define the intrinsic essence of a biological kind. Instead, anti-essentialists argue that species should be defined not by intrinsic but by relational properties where, for example, organisms belong to the same species if they can breed with each other. So, the anti-essentialists conclude, essentialism about species is undermined by evolutionary science.[10]

Third, essentialism maintains that biological essences have explanatory power. In reality, anti-essentialists argue, evolutionary biologists do not even need to know anything about an individual and its alleged essential traits to understand how evolution works. All they need to do is to identify the statistical distribution of traits within populations of individuals and to understand how these change over time. As Ernst Mayr puts it, "All organisms and organic phenomena are composed of unique features and can be described collectively only in statistical terms. . . . For the typologist, the type (*eidos*) is real and the variation an illusion, while for the populationist the type (average) is an abstraction and only the variation is real."[11] Evolutionary biology has replaced individual thinking in biology with population thinking. So, the anti-essentialists conclude, essences understood as the essences of individuals are irrelevant to explanation in evolutionary science.[12]

Finally, essentialism maintains that each and every organism has one and only one essence that specifies it as a member of a particular kind. But contemporary evolutionary biology favors species pluralism, which is the view that organisms can be grouped into several equally real species depending upon the particular species concept that is employed to categorize the diversity of life. Since

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[9]Samir Okasha, "Darwinian Metaphysics: Species and the Question of Essentialism," *Synthese* 131 (2002): 191–213, at 196.

[10]Among others, this argument can be found in David Hull, "The Effect of Essentialism," and more recently, Okasha, "Darwinian Metaphysics."

[11]Mayr, "Darwin," 2.

[12]In addition to Mayr, this argument can also be found in Elliot Sober, "Evolution, Population Thinking, and Essentialism," *Philosophy of Science* 47 (1980): 350–83.

an individual organism can fall into more than one species group, it would seem that an organism could have more than one essence. So essences understood as distinct nature of individuals belonging to a particular kind are incompatible with evolutionary science.[13]

In light of these arguments, the prevalent view among biologists and philosophers of biology today is that essentialism has no legitimate role to play in contemporary biology. As Paul Griffiths puts it succinctly: "Since folk essentialism is both false and fundamentally inconsistent with the Darwinian view of species, it should be rejected."[14] Not surprisingly, this is also the prevalent view among many Christian theologians. They have received the biological consensus as established and settled truth. Recall Cole-Turner's claim, already cited at the top of this paper, that "there are no faint lines, no lines at all, in fact, that mark the advent of the human, unambiguously distinguishing our kind from other kinds or announcing our arrival."[15] Later in his book, he states, "when we look back on our past, it is hard to see clear biological definitions or natural boundaries that mark off our form of humanity from others. . . . Looking back, however, the lack of clarity makes it hard to see how we can think of ourselves as distinct."[16] Cole-Turner, like many of his peers in the academy, is anti-essentialist to the core.

III. The New Essentialist Response

Despite the anti-essentialist consensus, however, what is often not acknowledged among contemporary Christian theologians is that essentialism is making a comeback among analytic philosophers, many of whom posit that organisms have intrinsic essences.[17] In response to the anti-essentialist arguments summarized above, these "new essentialists" have provided cogent rebuttals to affirm the coherence of essentialism with evolutionary biology.

First, the new essentialists point out that essentialism, at least as it is conceptualized by the Aristotelian tradition, does not make evolution impossible. Denis Walsh puts it this way: "On Aristotle's scheme essences or natures are not transcendent fixed 'ideas'; they are goal-directed capacities immanent in

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[13]Among others, this argument can be found in Mark Ereshefsky, "Species Pluralism and Anti-Realism," *Philosophy of Science* 65 (1998): 103–20.

[14]Paul E. Griffiths, "What is Innateness?" *The Monist* 86 (2002): 70–85, at 72.

[15]Cole-Turner, *The End of Adam and Eve*, 69.

[16]Ibid., 124.

[17]For representative examples, see the following: Denis Walsh, "Evolutionary Essentialism," *British Journal for the Philosophy of Science* 57 (2006): 425–48; Michael Devitt, "Resurrecting Biological Essentialism," *Philosophy of Science* 75 (2008): 344–82; and Devitt, "Species Have (Partly) Intrinsic Essences," *Philosophy of Science* 77 (2010): 648–61. For a comprehensive monograph that explores the ramifications of the new essentialism beyond the confines of biology, see David S. Oderberg, *Real Essentialism* (New York: Routledge, 2007).

the structure of the organism. It certainly isn't inconsistent with Aristotelian essentialism to suppose that natures could change over time in just the way we have come to think that species do. Individual organisms may well vary in their formal and material natures, in such a way that over time some variants become more common than others."[18] Since species are made up of individuals, and individuals can change, both accidentally and substantially, species can change. They are not fixed. They are not static.

Next, the new essentialists propose that the inherent difficulty of identifying a complete, necessary, and sufficient set of species-specific traits for every distinct species does not make essentialism implausible. Essentialism simply posits the existence of an essence that explains why an organism behaves in the way that it does. In the view of the new essentialists, essentialism does not require that we can necessarily define that essence with metaphysical certitude. Michael Devitt puts it this way:

> It seems as if the consensus should be simply that the crude idea that there is, say, "a tiger gene" is wrong. But to reject that crudity is not to reject the idea that a certain cluster or pattern of underlying, largely genetic, properties is common and peculiar to tigers . . . *An intrinsic essence does not have to be "neat and tidy."* And, because the intrinsic essence is identified by its causal work, we need not be concerned that the identification will be *ad hoc*: the essence of the Indian rhino is the underlying property that does, as a matter of fact, explain its single horn and other phenotypical features.[19]

Building on insights garnered from developmental biology, there are new essentialists who have gone further than Devitt's *ad hoc* account of an intrinsic essence, suggesting instead that an organism's essence is constituted by its developmental modules,[20] or by its developmental programming.[21] Elsewhere, I have proposed that systems biology provides another approach to ground the essence of an organism in the total sum of all the organized patterns of the molecules in the organism through time—in the jargon of systems theory, the organism's state space or phase state.[22]

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[18]Walsh, "Evolutionary Essentialism," 431.

[19]Devitt, "Resurrecting Biological Essentialism," 371.

[20]Christopher J. Austin, "Aristotelian Essentialism: Essence in the Age of Evolution," *Synthese* (2016), doi: 10.1007/s11229-016-1066-4.

[21]Stephen J. Boulter, "Can Evolutionary Biology do Without Aristotelian Essentialism?" *Royal Institute of Philosophy Supplement* 70 (2012): 83–103.

[22]For details and extensive discussion, see the following papers: "On Static Eggs and Dynamic Embryos: A Systems Perspective" *National Catholic Bioethics Quarterly* 2 (2002): 659–83; "Immediate Hominization from the Systems Perspective," *National Catholic Bioethics Quarterly*,

As a side note, I think that it is important to acknowledge that the challenge of identifying the definitive species-specific traits of a natural kind is not a modern problem precipitated by the discovery of Darwinian evolution. Aquinas too thought that the essence of sensible things—defined by a genus and a specific difference—remains hidden because of the matter in which it is rooted:

> Since we do not know essential differences, sometimes, as is said in the *Metaphysics*, we use accidents or effects in their place, and name a thing accordingly. Hence, in so far as something other than the essential difference of a thing is used as the source of a word, the word is said to be derived from the one who uses it. An example of this is the word *lapis* (stone), which is derived from its effect, *laedere pedem* (to bruise the foot). Now, this effect should not be taken as that which the word principally signifies, but merely as that which takes the place of what is signified.[23]

Intrinsic essences can exist even if we are not able to completely comprehend or define them because they are buried deep within the primary matter of substance. Instead, we often have to settle for grasping accidental qualities or effects of the thing's acts that partly reveal its essential nature.

Third, the new essentialists have proposed that robust biological explanations presuppose the intrinsic essences of individual organisms. For instance, Devitt notes that biologists would not be satisfied with relational explanations that do not refer to the inherent nature of an organism:

> Why do tigers have stripes? It is no help to be told that it is because they can interbreed with Benji. That does not tell us why any tiger, including Benji, has stripes. Why do polar bears have poor eyesight? Once again, their relation to some Ur-bear gives no explanation just as the relation of pieces of gold to the stuff in Fort Knox gives no explanation of why they are malleable. And so on through indefinitely many structural questions about the morphology, physiology, and behavior of species.

4(2004): 719–38; and "The Soul and Its Inclinations: Recovering a Metaphysical Biology with the Systems Perspective," in *The Human Animal: Procreation, Education, and the Foundations of Society,* Proceedings of the X Plenary Session, 18–20 June 2010, The Pontifical Academy of St. Thomas Aquinas (Vatican City: The Pontifical Academy of St. Thomas Aquinas, 2011), 48–63.

[23] *De Veritate* 4.I ad 8. Translation taken from St. Thomas Aquinas, *Truth, Volume I, Questions I–IX*, trans. Robert W. Mulligan, SJ (Chicago: Henry Regnery Company, 1952), 175. Cf. *Contra Gentiles* I.3: "We do not know a great many of the properties of sensible things, and in most cases we are not able to discover fully the natures of those properties that we apprehend by the sense." Translation from St. Thomas Aquinas, *Summa Contra Gentiles Book One*, trans. Anton C. Pegis (Notre Dame: University of Notre Dame Press, 1955), 65. In my view, Aquinas provides an explanation for why biologists will never be able to properly identify a species concept that truly distinguishes all the natural kinds in creation.

> All these questions concern facts about species that could not be brute: the facts have to be explained. The suggested answers . . . cannot provide adequate explanations. The moral of this discussion is that any adequate explanation cannot appeal only to relational properties of members of the species in question because those relations cannot bear the explanatory burden. An adequate explanation must appeal to intrinsic properties of the organisms. It is something about the intrinsic natures of lions, tigers, polar bears, and so on that provides the explanation (along with some environmental factors).[24]

Similarly, Stephen Boulter proposes that an account that links an organism's intrinsic essence to its species-specific developmental program actually explains why the organism is the organism that it is, with the capacities that it has, undergoing the natural selective pressures that it experiences: "A developmental control gene can be seen as a selector switch that makes choices from a range of potential developmental fates. These switches are responsible for the 'universal' properties of phenotypes. And these switch points allow for phenotypic alternatives that can become subject to selection pressures."[25]

In the end, in the view of the new essentialists, the best biological explanations today *do* appeal to structural explanations that refer to the intrinsic natures of individual organisms. Biological essences *do* have explanatory power.

Finally, in response to recent proposals that favor species pluralism, the new essentialists make the distinction that Aristotelian essentialism is not an attempt to place biological organisms into taxonomic categories. Rather it is a metaphysical theory that seeks to explain why organisms are what they are. Thus, essentialism is not incompatible with a species pluralism that puts organisms into different taxa depending upon the particular criteria that are being used to categorize the diversity of life. Walsh explains it this way:

> Aristotle's biological essentialism isn't committed to a single criterion of species membership. It isn't committed to the category of Linnaean species at all. It simply asserts a thesis about biological explanation—viz. that the natures of organisms explain their salient features and that shared natures explain resemblances among organisms—not about biological taxonomy. Explanatory essentialism is consistent with the category of Linnaean species, should there be such a thing, being demarcated by different criteria in different contexts.[26]

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[24]Devitt, "Resurrecting," 363.

[25]Boulter, "Can Evolutionary Biology," 101.

[26]Walsh, "Evolutionary Essentialism," 432.

Biologists attempting to place organisms into the different taxonomic categories of kingdom, phylum, class, order, family, genus, and species, are not doing the same thing as metaphysicians seeking to understand the reality and intelligibility of the organisms around us, which are similar and yet different, stable and yet changeable.

In light of these arguments, I think that there are sound and robust reasons to affirm the classical claim that human beings have an essence that is shared by all individuals that marks us off as a natural kind. Christian theologians can now respond to the challenge of rearticulating their propositions of faith in light of recent discoveries in the science without jettisoning the millennia-old, and commonsensical, conviction that organisms with dynamic yet stable natures of a particular kind are really real.

IV. Adam After Darwin

The current scientific narrative for the origins of our biological species, *Homo sapiens*, would go something like this. Anatomically modern humans defined by a light-built skeleton, large brain, reduced face, and prominent chin, first evolved in East Africa from a more ancient African hominin population around 200,000 years ago.[27] Significantly, the ancestral population of humans never shrank below a number of approximately 10,000 individuals.[28] These modern humans eventually spread, first across Africa and, around 80,000 to 60,000 years ago, out of Africa, into Eurasia, replacing Neanderthals in Europe and western Asia as well as other more ancient human-like species, i.e., archaic humans, in eastern Asia and Oceania. This replacement was accompanied by interbreeding among these human-like species such that all non-African populations today inherited roughly 1.5–4 percent of their genomes from their Neanderthal ancestors, and all Melanesians today inherited between 1.9–3.4 percent of their genome from another extinct species of archaic humans called Denisovans. Clearly, our history as a biological species is shaped by migration, interbreeding, and unrelenting adaptation that has generated much diversity within the human population.

Can this scientific consensus be reconciled with the theological account of a unique beginning for our kind in an original human individual? If you are

[27]For details and citations to the scientific literature for the narrative given here, see the following reviews: Bastien Llamas et al., "Human Evolution: A Tale from Ancient Genomes," *Philosophical Transactions of the Royal Society B: Biological Sciences* 372 (2017): 20150484; Christ Stringer, "The Origin and Evolution of *Homo sapiens*," *Philosophical Transactions of the Royal Society B: Biological Sciences* 371 (2016): 20150237; and Marta Mirazon Lahr, "The Shaping of Human Diversity: Filters, Boundaries and Transitions," *Philosophical Transactions of the Royal Society B: Biological Sciences* 371 (2016): 20150241.

[28]H. L. Kim et al., "Divergence, Demography, and Gene Loss Along the Human Lineage," *Philosophical Transactions of the Royal Society B: Biological Sciences* 365 (2010): 2451–7.

an anti-essentialist like many contemporary Christian theologians, you will conclude that it cannot. Population thinking simply precludes the possibility of a founding organism for a biological species. However, I am convinced that the reemergence of essentialism as a viable and robust metaphysical position in contemporary philosophy of science gives the Christian theologian the option of responding to this challenge in a more traditional vein.

I propose the following three-fold strategy to defend Adam after Darwin. First, we need to distinguish our understanding of ourselves as a biological species from our understanding of ourselves as a natural kind. Next, we need to identify a specific difference that specifies human beings as a natural kind. Finally, we will have to provide reasons why it is reasonable to think that our natural kind specified in this way was founded by an original individual.

To begin, for the most part, contemporary anthropologists define our species, *Homo sapiens*, using an historical analysis of archaeological data that begins in the past and moves forward to the present. By examining the fossil record, they have identified a set of anatomical characteristics, especially a light-built skeleton, large brain, reduced face, and prominent chin, which uniquely sets us apart from our hominin ancestors.[29] Presumably, these anatomical characteristics are linked to a particular set of genetic loci, still unknown, that specifies our anatomical form. Presumably, these individuals would also be able to interbreed to generate viable progeny. This is an account of who we are as a biological species.

In contrast to this archeological approach, I contend that it is also reasonable to characterize human beings by beginning in the present and moving backward into the past, since we know more about ourselves than our now extinct ancestors. Notably, contemporary anthropologists acknowledge that the *Homo sapiens* living today—that is, us—are anatomically modern humans that have an additional suite of behavioral and cognitive traits that sets us apart from our recent human ancestors, also members of *Homo sapiens*, who lived about 100,000 years ago. These traits have been linked to symbolic behavior, and their revolutionary emergence in recent human history has been called the Great Leap Forward.[30] This suggests that there are actually two populations of individuals in the biological species, *Homo sapiens*, those who did not think symbolically, and those that do. Thus, if we were able to identify a single biological trait that is shared by all extant human beings today that would distinguish us from these non-symbolic human ancestors of ours and from all the other animals around

[29]For references, see note 27.

[30]Ian Tattersall, "The Great Leap Forward," *Weber: The Contemporary West* 28 (2011): 40–7. Also see Tattersall, "Human Evolution and Cognition," *Theory in Biosciences* 129 (2010): 193–201. For an opposing minority perspective, see Sally McBrearty and Alison S. Brooks, "The Revolution that Wasn't: A New Interpretation of the Origin of Modern Human Behavior," *Journal of Human Evolution* 39 (2000): 453–563.

us, then we would be able to specify ourselves as a distinct population of living things. This would be an account of who we are as a natural kind: a natural kind I will call *Sapiens.*

Can we identify such a distinguishing characteristic? I think so. I propose that we as human beings living today can be specified by our capacity for language. This language faculty meets the three criteria one would expect for a specific difference that would define our natural kind.

First, the capacity for language is rooted in our biology.[31] As Robert Berwick and Noam Chomsky, two of the world's foremost language scientists, explain: "From the biolinguistic perspective, we can think of language as, in essence, an 'organ of the body,' more or less on a par with the visual or digestive immune systems. . . . In this case, it is a cognitive organ."[32] Supporting evidence for this claim that there is an innate biological faculty of language includes the "instinctive" ability of infants to learn the complex rules of their native language(s) and the shared architectural principles and parameters that structure the world's 7,000 or so languages.[33] It is striking that newborn babies already know something of the language of their mother on the day of their birth, where the newborns of English-speaking mothers can distinguish the melodic structure of English from that of French, and vice-versa.[34] As we will see below, these features of human language also point to a single common origin for the human language capacity. Note that this biological basis for the human language capacity clearly does not rule out environmental effects since the specific language(s) an infant learns as his native tongue, whether it is English or French or Filipino, is determined not by his nature but by his nurture.

Second, the capacity for language, understood correctly, is unique to our kind. Other animals have vocalizations, but human beings uniquely have language. As Berwick and Chomsky put it: "We are therefore concerned with a curious biological object, *language*, which appeared on earth quite recently. It is

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[31]For recent discussion, see Koji Fujita and Cedric Boeckx, *Advances in Biolinguistics: The Human Language Faculty and its Biological Basis* (Oxford: Routledge, 2016).

[32]Robert C. Berwick and Noam Chomsky, *Why Only Us: Language and Evolution* (Cambridge: MIT Press, 2016), 56.

[33]For discussion, see John H. McWhorter, *The Power of Babel: A Natural History of Language* (New York: Harper Collins, 2001); and Mark C. Baker, *The Atoms of Language* (New York: Basic Books, 2001). Recently, Tom Wolfe has challenged the claim that there is an innate capacity for language. Instead, he proposes that language is not a result of evolution but essentially a memory aid, a mnemonic, to store away information. I did not find his arguments persuasive because they simply do not explain how infants learn these mnemonics without explicit instruction and why the diversity of human languages is restricted to a few structural variants. See Tom Wolfe, *The Kingdom of Speech* (New York: Little, Brown, and Company, 2016).

[34]J. Mehler et al., "A Precursor of Language Acquisition in Young Infants," *Cognition* 29 (1988): 143–78.

a species property of humans, a common endowment with no significant variation apart from serious pathology, unlike anything else known in the organic world in its essentials, and surely central to human life since its emergence."[35] In support of this claim, they present evidence that demonstrates that human language is radically different from other forms of animal communication because it has three distinctive properties: (1) human language syntax is hierarchical, and is blind to considerations of linear order, with linear ordering constraints reserved for externalization; (2) the particular hierarchical structures associated with sentences affects their interpretation; and (3) there is no upper bound on the depth of relevant hierarchical structure.[36]

To illustrate these distinctive properties of human language, consider the sentence: "Peter is too angry to eat." Because of the hierarchical structure of human language, this sentence actually has two meanings. First, it could mean that Peter is so angry that he cannot eat. This would be the favored reading. However, it could also mean that Peter is so angry *that I cannot eat him*. (Compare this meaning to that of the sentence, "The soup is too hot to eat.") Both of these meanings are possible only because human language does not simply use a left-to-right ordering of words. In contrast, non-human primate vocalizations and all other animal communication systems known are restricted to linear sequencing of sounds to convey meaning.

Though it is difficult to prove empirically at this time, it is also noteworthy that distinguished anthropologist Ian Tattersall has proposed that the human capacity for language is what distinguishes behaviorally modern humans from their anatomically modern ancestors.[37] For Tattersall and his followers, the evolution of the language capacity would explain the recent revolutionary appearance of culture, the great leap forward, which occurred in the past 100,000 years.

Third, the capacity for language is intimately linked, in my view, with our rational capacity for abstract thought that Aristotle and Aquinas had identified as the specific difference of our species. Recently, Berwick and Chomsky have proposed, controversially but convincingly, in my opinion, that language evolved not for communication but for thought.[38] Their supporting evidence for the claim that language evolved for thought rather than explicitly for speech includes the hierarchical and non-linear structure of human language, the similarities

[35]Berwick and Chomsky, *Why Only Us*, 55.

[36]Ibid., 8.

[37]Ian Tattersall, "An Evolutionary Context for the Emergence of Language," *Language Sciences* 46B (2014): 199–206.

[38]For a counterproposal that human language evolved primarily for a social function, especially for communication, rather than for an individual function, i.e., talking to oneself, see S. Számadó and E. Szathmáry, "Selective Scenarios for the Emergence of Natural Language," *Trends in Ecology and Evolution* 21 (2006): 555–61.

between spoken and signed language both in their structure and in how they are acquired, and recent discoveries of genetic mutations that appear to specifically affect only the externalization process of human language. After listing several intriguing design properties of human language, they conclude: "These facts at once suggest that language evolved as an instrument of internal thought, with externalization as a secondary process."[39] To me, this suggests that we are rational animals because we are speaking primates, and vice-versa.

But, why language? An interlocutor could object that there is no reason to believe that language should uniquely serve as a benchmark for abstract thought, and as such, as the specific difference for that which makes as rational animals. In fact, there have been many counterproposals for proxies for the appearance of human cognition in the archaeological record, including the controlled use of fire or the crafting of jewelry or the invention of specific tool-types.[40]

In response, I propose, provocatively, I know, that the capacity for abstraction—which I define here as the capacity to form an abstract concept that corresponds to the quiddity of a thing that is perceived through the senses—presupposes the capacity for language. In his commentary on the Gospel of John, Aquinas describes this process of abstraction this way:

> For when I wish to conceive the notion of a stone, I must arrive at it by reasoning. And so it is in all other things that are understood by us, with the sole possible exception of the first principles which, since they are known in a simple manner, are known at once without any discourse of reason. So as long as the intellect, in so reasoning, casts about this way and that, the formation is not yet complete. It is only when it has conceived the notion of the thing perfectly that for the first time it has the notion of the complete thing and a word. Thus in our mind there is both a "cogitation," meaning the discourse involved in an investigation, and a word, which is formed according to a perfect contemplation of the truth.[41]

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[39]Berwick and Chomsky, *Why Only Us*, 74.

[40]For examples of these counterproposals, see April Nowell and Iain Davidson, eds., *Stone Tools and the Evolution of Human Cognition* (Boulder, CO: University of Colorado Press, 2010); Marlize Lombard and Miriam Noël Haidle. "Thinking a Bow-and-Arrow Set: Cognitive Implications of Middle Stone Age Bow and Stone-Tipped Arrow Technology," *Cambridge Archeological Journal* 22 (2012): 237–64; and C. M. Duarte, "Red Ochre and Shells: Clues to Human Evolution," *Trends in Ecology and Evolution* 29 (2014): 560–5. Also see, Frederick L. Coolidge and Karenleigh A. Overmann, "Numerosity, Abstraction, and the Emergence of Symbolic Thinking," *Current Anthropology* 53 (2012): 204–25.

[41]*Lectura super Johannem* I.1.26. Translation from St. Thomas Aquinas, *Commentary on the Gospel of John, Chapters 1–5*, trans. Fabian Larcher, OP, and James A. Weisheipl, OP,(Washington, D.C.: The Catholic University of America Press, 2010), 14.

Recall from the discussion above that there is evidence from the architecture of language and from our everyday experience where we spend most of our time speaking to ourselves, that language evolved primarily as a tool that allowed our ancestors to speak not to others but to themselves. What did our first ancestors speak to themselves about? In my view, if abstraction involves discourse in the way that Aquinas believes—and I think that he is correct here—then one of the things our ancestors must have done was to speak to themselves to form abstract concepts, as their intellects "cast about this way and that." We grasp the concept through the word.

In sum, for these three reasons, I propose that the human language faculty defines extant human beings as a natural kind, the natural kind I will call *Sapiens*, within the population of individuals that evolutionary biologists and anthropologists have called the biological species, *Homo sapiens*. To put it another way, I posit that the biological species, *Homo sapiens*, is made up of at least two natural kinds, those *Homo sapiens* who could not speak, and those *Homo sapiens* that could. As speaking primates, we belong to the latter.

Finally, to conclude my three-fold strategy to defend Adam after Darwin, I propose that if human beings are specified as a natural kind by our capacity for language, then the origins of our natural kind should be linked to the evolutionary appearance of this linguistic capacity. Though much work remains to uncover the mystery of language evolution—and I want to emphasize that there are many other plausible models for how this could have occurred[42]—I think that a reasonable case can be made for this linguistic capacity appearing first in a single historical individual.

Given the species-universality of human language, the striking architectural similarities among human languages, and the recent provenance of human language, it is more than likely that the capacity for human language we all share today appeared only once in evolutionary history. There simply is not enough historical time in the past 100,000 years for us to posit two independent genetic events that gave rise to the same linguistic capacity that is so shared among all extant human beings that we can expect newborns from Timbuktu, Mali, to easily learn American English in Cody, Wyoming. This is the nature of adaptive biological mutations. They are rare. Once we realize that it is more than likely that the linguistic capacity evolved only once in human history, then it makes it more than likely that the biological change that heralded the appearance of human language occurred in only one historical individual.

[42]For discussion, compare Johan J. Bolhuis, Ian Tattersall, Noam Chomsky, and Robert C. Berwick, "How Could Language Have Evolved?" *PLoS Biology* 12 (2014): e1001934; and Marc D. Hauser, Charles Yang, Robert C. Berwick, Ian Tattersall, Michael J. Ryan, Jeffrey Watumull, Noam Chomsky, and Richard C. Lewontin, "The Mystery of Language Evolution," *Frontiers in Psychology* 5 (2014): 401.

In a similar vein, Chomsky has proposed that the capacity for language arose in a single human individual, who was living among our ancestral population of anatomically modern humans in East Africa:

> It looks as if—given the time involved—there was a sudden "great leap forward." Some small genetic modification somehow that rewired the brain slightly [and] made this human capacity [for language] available. . . . Mutations take place in a person, not in a group. We know, incidentally, that this was a very small breeding group—some little group of hominids in some corner of Africa, apparently. Somewhere in that group, some small mutation took place, leading to the great leap forward. It had to have happened in a single person.[43]

In Chomsky's view, this mutation in the single individual could have altered the wiring structure of his cortex to link language-related areas of the brain that are connected in human beings but remain isolated in chimpanzees and other non-human primates.[44]

Therefore, I claim that it is still reasonable to trace the origin of our kind to an original individual. He would have been the first anatomically modern human to have evolved this capacity for hierarchical and non-linear language that allowed him to form abstract concepts, to reason, and therefore, to construct an internal map of his world.[45] He would have been the first individual person belonging to *Sapiens* as a natural kind, living among a population of non-linguistic, non-personal hominins who would also belong to *Homo sapiens*, the biological species, but who would not belong to our natural kind.

V. Conclusion

In conclusion, I have proposed that once one rediscovers the legitimacy and explanatory power of essentialism, it once again becomes reasonable to reaffirm the origins of our kind in a single individual, the hominin who first evolved the capacity for human language, and thus for abstract thought and discursive reasoning. What is clear is that the mutational change that gave rise to the language faculty would have been extremely adaptive because it would have facilitated the ability of human beings to collaborate and to plan their activities into the future. Thus, it should not be surprising that the human language capacity underwent rapid positive selection. In other words, it so enhanced the survival

[43]Noam Chomsky, *The Science of Language: Interviews with James McGilvray*, ed. Noam Chomsky and James McGilvray (Cambridge: Cambridge University Press, 2012), 12.

[44]Berwick and Chomsky, *Why Only Us*, 157–64.

[45]Or to put it into classical scholastic language, he would have been the first anatomical modern human to have evolved matter that is apt to receive a rational soul.

of the speaking humans that they were able to outcompete the non-speaking *Homo sapiens* and the other hominins who lived alongside them. In time, their descendants would emigrate from Africa and populate the rest of the globe such that all of us today can say that we are direct descendants of the first speaking man, because we too can speak. We too are speaking primates.

Providence College
Providence, Rhode Island