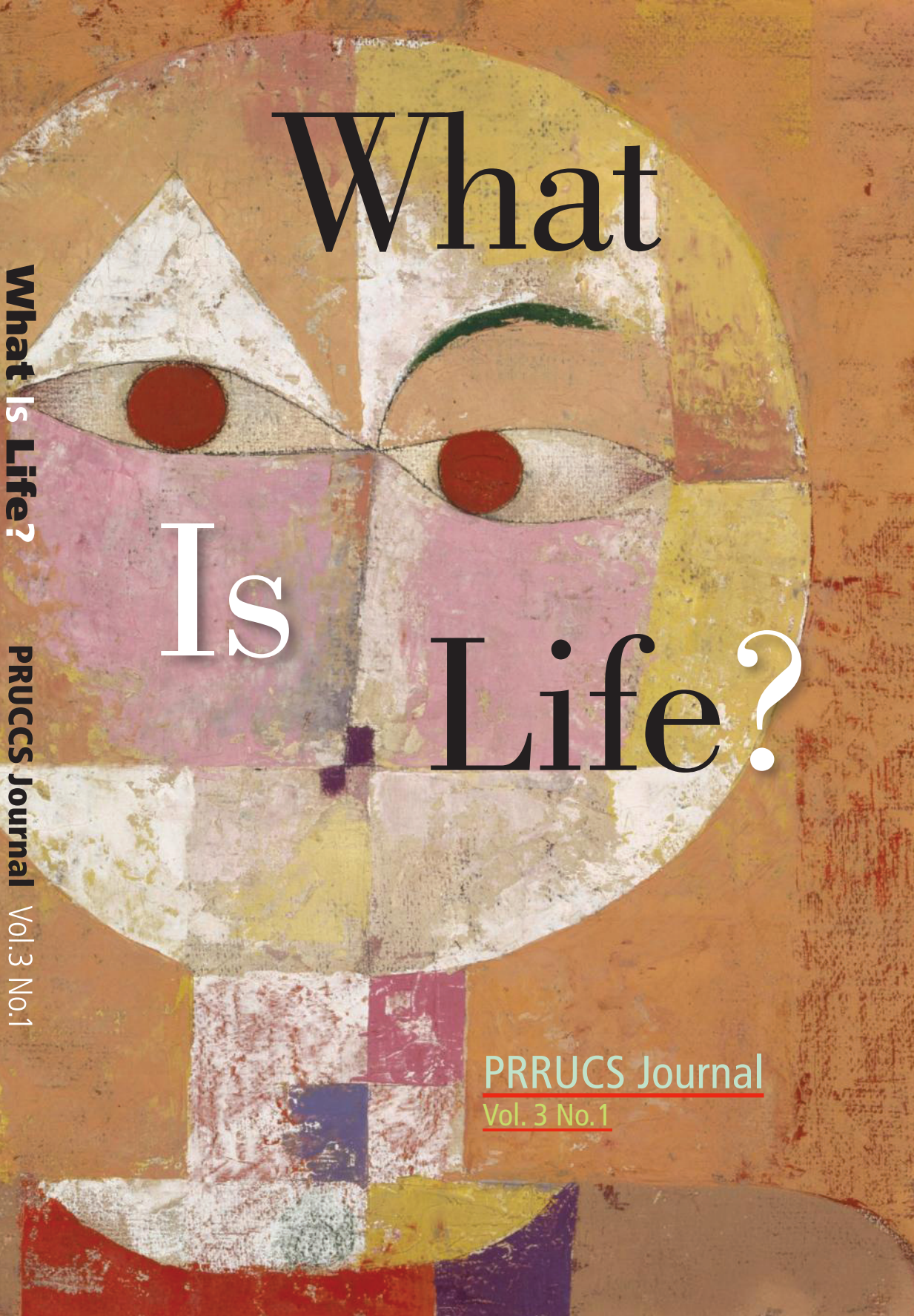

What Is Life? PRUCCS Journal Vol.3 No.1

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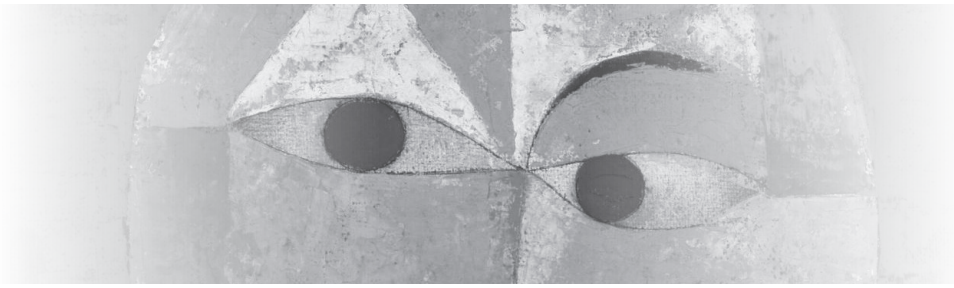
WHAT IS LIFE?



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THE MAGI PROJECT FOR SCIENCE & THEOLOGY

PROGRAM FOR RESEARCH ON
RELIGION AND URBAN CIVIL SOCIETY

What Is Life?

Multidisciplinary collaborative discussions from the Magi Conference presented by Collegium Institute and Program for Research on Religion and Urban Civil Society (PRUCCS), and The Magi Project, June 2022 in Philadelphia

Jessie Taylor, *editor*
Caroline Arnold, *assistant editor*

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The What Is Life? *conference was organized by the Program for Research on Religion and Urban Civil Society at the University of Pennsylvania and the Collegium Institute's Magi Project. We would also like to thank the John Templeton Foundation who made this conference possible through their support of 'In Lumine: Supporting the Catholic Intellectual Tradition on Campuses Nationwide' (Grant #62372).*

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INTRODUCTION

THE CLASSIC FIRST move in the childhood game "20 questions" is asking "animal, vegetable or mineral?" If you haven't played, the goal of this game is to guess what the other player is thinking by asking no more than 20 yes or no questions. Since they can be thinking of absolutely anything–a vacuum cleaner, a daisy, their pet dog, Cleopatra or the Andromeda galaxy–they first have to categorize their thought: is it an animal or a vegetable or a mineral? That the game starts here speaks to a fundamental desire to categorize things. It also recognizes that these categories–animals, plants or non-living things–are ones into which we can quickly and intuitively sort most things we encounter.

This impulse to categorization helps us make sense of life, ourselves and our place in the universe. We are living things, as opposed to non-living. Among the living things, we are animals as opposed to plants. And among the animals, we are the intelligent ones. Even when we consider where we live, here on planet Earth, our place has the distinction of being the only planet known to us to have life.

However, the frontiers of scientific research across many disciplines call into question which of these distinctions, if any, still hold. The discovery of untold numbers of planets outside our solar system that seem to meet certain requisite biological requirements make it statistically likely that there is, or was, life on other worlds. Even here on earth, humans are not the only creatures that have language and tools, while trees communicate and seem to exhibit some sort of community. We inch ever closer to artificial intelligence. In short, it might appear that we are no longer special, nor even live in a special place. All this has profound implications for our understanding of life, ourselves and our place in the universe and raises questions across world cultures and religious traditions.

On the surface, this blurring of distinction between intuitive categories and this kind of decentering of humanity can be disorienting. To work through some of the implications of these scientific developments, scientists, philosophers and theologians—experts in their fields—gathered at the University of Pennsylvania in the summer of 2022 for an international, multi-day collaborative conversation. The use of conversation here is intentional. Broadly, we set out to discuss the question "What is life?", but as you flip through the pages of this journal, you'll see that we divided it into multiple sub-questions. Around each of these subquestions, a scientist and a philosopher or a theologian engaged in conversation with each other, and with all the conference attendees.

What you hold in your hands is fruit of these conversations, but it is not the conference proceedings. We intentionally did not record the entire conference. One of the joys of the conversation is the space it creates for the development of thought, where you can put forward incompletely formed ideas and allow conversation partners to help you shape them. Recording can stilt that, adding an element of artifice to the conversation. So instead of the full conference proceedings, we offer you this correspondence between our speakers. Before the conference, each conversation pair wrote and exchanged their initial responses to their subquestions; we have included those pieces here. During the conference, they briefly presented their thoughts and had a fuller conversation with each other. And after the conference, they wrote about ways their thinking may (or may not) have changed or developed based on their conversations, about what new questions the conversations raised; those final pieces are also included.

In these pieces, you will get a sense of the richness of these conversations. They were by their very nature interdisciplinary, as each member of the conversation brought in their discipline and the expertise of their fields. The conversations were generous and illuminative. Since people were speaking across disciplines, they were intentional in their explanations; I hope you will find these pieces approachable. For many of the attendees and speakers, this was the first in-person conference since the lockdowns in 2020. This

gave a unique energy to the conversations, as people appreciated anew the possibilities of dialogue. These conversations were also constructive. Academia can be increasingly siloed and its not often that we can engage in truly interdisciplinary work. This space for conversation allowed the speakers to grapple with the implications of each other's work and identify how it might shape and challenge their own.

One idea that, while not specifically named, seemed to resonate through many of these conversations is that of emergence. While we can discuss these aspects of life or these possible distinctions between certain kinds of life, life is something that is incompletely defined by these categories, something that emerges from and is greater than the sum of its parts.

Likewise, what emerges from these conversations is something richer and fuller than each individual piece. What that is I will leave it to their writings to reveal and you to discover in the pages ahead.

This conference was organized by the Program for Research on Religion and Urban Civil Society at the University of Pennsylvania and the Collegium Institute's Magi Project. We would also like to thank the John Templeton Foundation who made this conference possible through their support of 'In Lumine: Supporting the Catholic Intellectual Tradition on Campuses Nationwide' (Grant #62372).

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WHAT IS LIFE?

KEYNOTE

Belonging to this World and the Next

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ABSTRACT

This essay will tackle the question, "What is life?" by focusing on human becoming as grounded in this world, yet orientated towards transcendence and the moral sense. Human evolutionary theories have shifted from individual competitively based frameworks to a much stronger emphasis on niche construction, where humanity is understood as existing in a meshwork of other beings. In dialogue with evolutionary anthropology, including recent discoveries of burial practices among early hominins, I argue that a sense of transcendence, like the fundamental ability of human beings to show long term compassion towards others, is distinct to our lineage. Capacities for specific dispositions such as compassion do not suddenly appear in human communities, but have a complex biocultural origin. Using wisdom, humility, and grace as case studies, I also draw out examples of how each can be a fruitful locus of dialogue and discussion between theologians and scientists on the basic question of what human life is.

BEGINNING A DIALOGUE: WHAT IS LIFE IN THE CONTEXT OF THE MAGIS

I currently work in a Jesuit graduate college at the University of Oxford. The founder of the Jesuits, Ignatius of Loyola, talks in his *Spiritual Exercises* about the need to always reach out to do what is *more* for the sake of Christ and *more* in service of others. The *magis* that he proposes cannot be understood without understanding the need for humility; it is therefore about aiming to get better and do more, but not necessarily aiming to be the best. That *more* is necessarily orientated towards the glory of God.

But where precisely does this desire for *the more* come from in so far as it is orientated towards the divine, the unseen other, who draws human beings into such desires? My argument is that humanity is situated within perceptions that belong to this world but are necessarily orientated towards the next, and that this dual orientation is a fundamental aspect of what it means to be human.

Human beings are the only living creatures on the planet who have the capacity to ask these kinds of questions. Even the question, "What is life?" is a profoundly human one to ask.

Embedded within and even prior to the question, "What is life?" is therefore the larger question of what it means to be human. I will touch briefly on aspects of this question as a way of opening other aspects that will be filled out by others taking part in this conference.

I argued in a book entitled the *Wisdom of the Liminal*,[1] which was published some years ago, that our human distinctiveness is one that is precariously situated between two borderlands, at the porous boundary between humanity and animality, and at the porous boundary between materiality and the experience of the transcendent. That does not mean that experience of the transcendent is necessarily about *detachment* from the world, rather it is

1 Celia Deane-Drummond, *The Wisdom of the Liminal: Evolution and Other Animals in Human Becoming* (Grand Rapids: Eerdmans Publishing Company, 2014).

the ability to see and *perceive* that world differently, to detect in it another dimension that is not just confined to accounts which describe empirical facts about the way the world works. Even these facts, as those who have worked in different contemporary sciences know from their experience of immersion in the practice of science, are also, themselves, in some sense theory laden, or more accurately perhaps, accompanied by the baggage that comes with being embedded in a history that takes its cues from the Enlightenment and Western philosophies. Biologists, ironically perhaps, who aim to study life in all its dimensions, are also among those who find it hardest to admit to the intellectual respectability of recognizing the presence of the divine other. For example, at a high-level symposium meeting at an Ivy League university in the USA, in which I took part, two highly respected evolutionary scientists who have dedicated their lives to a study of human evolution did not want to be associated in any way with a publisher that accepts academic publications by theologians who, generally speaking, come from a standpoint of religious faith. For them, association with such a publisher betrayed a commitment to a particular kind of reason, which considers anything beyond this world to be incapable of being proved and therefore outside the bounds of rigorous and respectable academic research. But such an attitude against any association with theology as an acceptable intellectual pursuit is relatively modern, as historians of science and religion are aware.[2] Sociologist of religion Peter Berger's highly influential secularization thesis predicted that over time, communities will gradually become less religious. In the wake of the explosion of radical religious movements, though, he retracted his theory.[3] The debate is not over yet, however, for Steve Bruce argues that the relegation of religion to the private sphere[4] is also a form of secularization,[5] and one that seems to be accepted by atheist biologists.

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2 Peter Harrison in *The Territories of Science and Religion* has shown clearly how even the categories of science and religion are relatively modern inventions. Peter Harrison, *The Territories of Science and Religion* (Chicago: University of Chicago Press, 2017).

3 Peter Berger, "Further Thoughts on Religion and Modernity," Society 49, Iss. 4 (July 2012): 313-316.

4 That is, allowing individuals to hold religious beliefs, but insisting that these positions be kept firmly out of public education and the academy.

5 Steve Bruce, *Secularization: In Defence of an Unfashionable Theory* (Oxford: Oxford University Press, 2013).

In *Sources of the Self*, Charles Taylor makes an important distinction between the porous and buffered self, the former being characteristic of pre-modernity, the latter of modernity.[6] The porous self is the pre-modern model of the self in which the boundary between self and world is porous, such that external forces (demons and angels) can enter the self. This porous self stands in contrast to the modern world's buffered self, a self-contained, individual entity. It seems, therefore, that the individual in the Western contemporary, secularized world has found ways to shield himself from extrinsic sources, but in doing so it has forgotten essential aspects of the human condition.

WISDOM, HUMILITY AND GRACE IN DEEP TIME

Focusing on *liminality* in understanding what it means to be human emphasizes those aspects of humanity that tend to be bracketed off in contemporary thought. A few years ago, I had the privilege of co-leading an advanced symposium in evolutionary anthropology entitled *Wisdom, Humility and Grace in Deep Time*[7] at the University of Stellenbosch in South Africa. Many of the palaeoanthropologists who came to that meeting had never met theologians before. Their openness to engaging in dialogue with those who were from very different backgrounds allowed for a fruitful conversation. While wisdom could be understood—or rather, operationalized—for the purposes of a scientific method if translated into more symbolic language and humility could be understood in relation to the need for healthy community relationships, the meaning of *grace* was much harder to engage from an evolutionary perspective.

Bringing in a theology of grace insofar as it connects with our biocultural being was a deliberate (if perhaps risky) provocation, and the scientists at this meeting didn't quite know what to make of it. What it did raise, however, was the importance of a sense of the sacred or the experience of the divine other in the lives of those with religious beliefs in a way that clashed with the

6 Charles Taylor, *Sources of the Self: The Making of Modern Identity* (Cambridge: Harvard University Press, 1989).

7 Articles arising out of this symposium were published a few years later in a book format. Celia Deane-Drummond and Agustín Fuentes, *Theology and Evolutionary Anthropology: Dialogues in Wisdom, Humility and Grace* (London: Routledge, 2020).

presuppositions inherent in modern Western science. Facing that challenge head-on in that context led not to hostility, but to some honest exchanges that uncovered both the challenges and opportunities of working in this area. It also, I would add, told us something important about what it means to live a human life. Much of the second half of this lecture draws on and is inspired by that experience.

I will lay out two major parts of this lecture. In the first half I will tackle the more theoretical considerations of how to begin to construct a theological anthropology in the light of different evolutionary theories. I think this is important because without such a framing, it becomes harder to understand what I tackle in the second half, namely, the novel attention among paleo-anthropologists to the evolution of inner affective worlds, starting with compassion, but also with reference to humility. Our human becoming is not just about bones and materials, but also about our inner cultural worlds that make up a form of life that is distinctively human. But it is the way we also belong to the next life—or rather, tune in to the transcendent—that really interests me as a thread running through this lecture.

WHAT IS HUMAN LIFE?

Exploring Contested Theories in Human Evolution[8]

Before embarking on a discussion of evolutionary anthropology, it is important to look briefly at historical and philosophical aspects of standard evolutionary theory. Historian Phillip Sloan argues that the epistemological background to Darwin's work is the philosophical stance of natural history realism (NHR).[9] Understanding NHR helps to identify the basic assumptions in standard evolutionary biology, which relies on evolutionary theories of evolution by natural selection. Sloan objects to what he views as Darwinian perspectives

8 I discuss these issues in more detail in Celia Deane-Drummond, *Theological Ethics Through a Multispecies Lens: Evolution of Wisdom*, Vol. 1 (Oxford: Oxford University Press, 2019).

9 Philip Sloan, "Questioning the Zoological Gaze: Darwinian Epistemology and Anthropology," in *Darwin in the Twenty-First Century: Nature, Humanity and God*, ed. Phillip Sloan, Gerald McKenny, and Kathleen Eggleson (Indiana: University of Notre Dame Press, 2015), 232–66.

encroaching on humanistic disciplines, particularly Charles Darwin's work on humanity in his *Descent of Man*.[10] NHR is unabashedly observational in emphasis and assumes that humanity has direct access to the structure of the world through that detailed observation. Sloan characterizes NHR as an *optimistic* and *descriptive* conception of knowledge about human becoming: what is searched for is the true "natural system," rather than something hidden or disguised,[11] bracketing out the problem of human subjectivity and the difficulties of human cognition.

Darwin upset traditional distinctions between reason and instinct, free will and determinism, as well as the theological stress on human superiority and uniqueness. But one of Darwin's most knotty problems in doing that was accounting for "the difficulties of the Moral sense" which "has [sic] caused me much labour."[12] The leap that Darwin is forced to make (in Sloan's interpretation) is that between understanding the difference between humans and other creatures as *analogies* rather than simply *homologies*.[13] Homologies are about genuine anatomical identities, such as the flipper of a whale corresponding with the forelimb of a bat or a human. Analogies refer to common function, but are not necessarily homologous, so, how the pectoral fin of the flying fish relates to the wing of a bird.

Sloan urges focusing on the experience of ourselves as "existentially existent, conscious, and self-reflective beings…to grant full reality to our pre-philosophical experience as human beings in the world, a reality that stands *prior* to our scientific rationalizations about our origins, or to causal explanations of human experience that then might be supplied by the natural sciences."[14] Finding commonalities across different species as explained through evolution by natural selection seems to avoid the specific self-reflexive character of human life. How might the eccentric nature of the

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10 Darwin, Charles. *The Descent of Man* (Princeton: Princeton University Press, 1982).

11 Sloan, "Questioning the Zoological Gaze," 236.

12 "Charles Darwin to Asa Gray 15 March 1870," in *The Correspondence of Charles Darwin*, ed. F. Burkhardt et al. (Cambridge: Cambridge University Press, 1985), cited in Sloan, "Questioning the Zoological Gaze," 245.

13 Sloan, "Questioning the Zoological Gaze," 246–249.

14 Sloan, "Zoological Gaze," 250–251.

human condition[15] be accounted for in evolutionary terms?

Most philosophers, historians and theologians focus on classic Darwinian theories or what is sometimes called the Darwinian synthesis, rather than later adjustments to that theory. The more deterministic elements of classical theory are softened in these newer theories, which put much more emphasis on human becoming through systems approaches rather than individual notions of survival. Niche construction theory within an extended evolutionary synthesis approach is a good example of that trend towards understanding human becoming as integrated into a dynamic relationship with other beings. It presents a model of human becoming more as that of *belonging to this world* rather than remote from it. The Developmental Systems Theory (DST) of Susan Oyama challenges the assumptions of cause and effect presumed in standard evolutionary theory and instead focuses on the system as a whole and the phenotype, so there is "no central organizer, no repository of goals or instructions, no prime mover";[16] such ideas amount to what she terms "the *homunculoid gene*," that is, a reading of the gene as if it were an extension of our humanity.[17] Sitting between a classical standard evolutionary theory (SET) and DST is the extended evolutionary synthesis approach (EES).

Kevin Leyland supports EES by citing similarity of body shapes among cichlids in Lake Malawi compared with those in Lake Tanganyika, including some with large fleshy lips, some with protruding foreheads and some with short, robust lower jaws, even though (genetically) the cichlids in Lake Malawi are more closely related. SET explains that such convergence relies on genetic processes and natural selection that then leads to similar forms. But Laland comments, "This account requires extraordinary coincidence to explain the multiple parallel forms that evolved independently in each lake."[18] He argues that *development bias guides gene pathways down specific routes that are opened*

15 That is, the ability to stand outside ourselves.

16 Susan Oyama, "Causal Democracy and Causal Contributions in Developmental Systems Theory," *Philosophy of Science* 67, (Sept. 2000): S332-47.

17 Oyama, "Causal Democracy," S336, S338.

18 Kevin Laland, Gregory Way, et al., "Does Evolutionary Theory Need a Re-Think? Researchers are Divided over What Processes Should be Considered Fundamental," Nature 514 (October 2014): 161–4.

up by development.[19] The framing of the way such results are explained differs compared with SET. So, in SET developmental bias imposes "constraints" on evolution by natural selection. For EES, the developmental processes are more active and could be thought of as a "creative element, demarcating which forms and features evolve, and hence accounting for why organisms possess the characteristics that they do."[20] NCT, as the name implies, is about the purposeful and directional manner in which organisms build their worlds: for example, termites construct and build their homes in a manner that is shaped by past selection and anticipates further selection.

Anthropologist Tim Ingold's most fundamental critique of standard evolutionary theories, and one that is relatively easy to miss even though it is startling at first sight, is the assumption that the information flow from genes to life provides proper understanding of the actual life process of living organisms.[21] If humanity is understood as no longer a *buffered self*, but instead as living in an *open ecological community*, one that I will term a *multispecies commons*, it forces a consideration of the *bounded and connected relationships* between biology and culture. Self-reflexivity in such a context is never, therefore, about the isolated, disengaged self, but about understanding our identity in community with others. Ingold refuses to succumb to sociobiology—indeed, he is in radical disagreement with it, arguing it has lost touch with

19 Simon Conway Morris also admits an "eerie" quality to his convergence evolutionary theory that includes what looks like constraint along with the apparently "random" walk resulting from the sieve-like process of natural selection during evolution. He resists the idea of "purpose," but comes close to the concept of 'design'. Simon Conway Morris, *Life's Solution: Inevitable Humans in a Lonely Universe* (Cambridge: Cambridge University Press, 2004), i, 13–18. His more recent book Simon Conway Morris, *The Runes of Evolution: How the Universe Became Self Aware* (Philadelphia: Templeton Press, 2015), has come under attack from some evolutionary biologists who believe he is importing explicit religious presuppositions into his arguments. See, for example, Gerdien de Jong, "Deep Concord Between Science and Theistic Religion?" (lecture, Distinguishing Science and Metaphysics in Evolution and Religion, Lorenz Centre Conference, 28 August 2018). My own view is that Conway Morris is more in tune with a movement away from a biological metaphysics that adopts a narrowly defined (genetic) materialism that biologists such as Layland and Conway Morris are starting to challenge.

20 Laland et al., "Does Evolutionary Theory," 164.

21 Tim Ingold, "An Anthropologist Looks at Biology," Man 25, no. 2 (June 1990): 208–29.

the organisms it seeks to understand, leaving, as he claims, "no space for real people."[22]

What is crucial in Ingold's argument is that he recognizes that proposed parallels between genetic processes and social life in standard models of cultural evolution can disguise real differences, more specifically the need for "relationships thinking."[23] He also rejects the view of humans as "animals plus," which means that cultural thinking is split from biological thinking, the moral condition of humanity from the physical condition of animality.[24]

What is found in common is often attributed to human animality, whereas what accounts for variability is attributed to human culture. Tellingly, Ingold writes, "[a] good deal of the popular interest directed towards the contemporary populations of hunters and gatherers can be put down to the (wholly mistaken) notion that they are living exemplars of a prototypical humanity, a childhood of man from which the rest of us have grown up."[25] Both give a false impression of human biological nature as one that is uniform, lacking the emphasis on inter- and intra-species variability that is integral to modern biological science.[26]

Referring to evolutionary psychology's reduction of biology to genetic endowment as a top-down movement and "a theory of genetic determinism,"[27] he presses for a reconsideration of Lamarck's attention to the bottom-up movement of the inanimate-animate boundary through the postulation of a *vital force*.[28] Historically, the choice was between an inanimate mechanistic science that was not particularly biological and vitalistic biology that was not particularly scientific.

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22 Ingold, "An Anthropologist Looks at Biology," 208.

23 Ingold, "An Anthropologist Looks at Biology," 208.

24 Ingold, in a fascinating way, perceives the stress on cultural uniqueness as a secularized version of ancient religious ideas of spirit. Ingold, "An Anthropologist Looks at Biology," 209–10.

25 Ingold, "An Anthropologist Looks at Biology," 210.

26 Ingold, "An Anthropologist Looks at Biology," 211.

27 Ingold, "An Anthropologist Looks at Biology," 211. I come to the same conclusion in Celia Deane-Drummond, *Christ and Evolution: Wonder and Wisdom* (Minneapolis: Fortress Press, 2009), 60–94.

28 Ingold, "An Anthropologist Looks at Biology," 211.

Darwin never rejected the idea of acquired inheritance; rather, it was August Weismann who made sure that heritability was confined to the germplasm.[29] His thesis and the development of modern genetics formed the conceptual basis for "the complete separation of ontogeny from phylogeny."[30] Ingold openly challenges Richard Dawkins's naive view that Darwinian theory explains life.[31] Ingold believes that if a much higher priority is given to trying to understand the range of "forms" that organisms can take, then what evolutionary biologists sometimes call "proximate" causes take primacy instead of genes, and evolution is more like "an exploration over time of the transformative potentials of a total generative system."[32]

The essentialist model of genotype plus phenotype leaves out the *physiological* processes that constitute life itself. In Ingold's definition, then, life is "a name for what is going on in the generative field within which organic forms are located and 'held in place.'"[33] In Darwinian theory, organisms are beings that express a preformed project that is then subject to external circumstances.

From Ingold's alternative starting point, organisms should be viewed as an embodiment of a life *process*, with a past, present, and future—a *movement* through time.[34] Life progressively builds and grows its own emergent structures, rather than consisting of an inanimate being that is then set in motion. The relational order in which everything is enfolded into everything

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29 Ingold, "An Anthropologist Looks at Biology," 212.

30 Ingold, "An Anthropologist Looks at Biology," 213.

31 Ingold, "An Anthropologist Looks at Biology," 213.

32 Ingold, "An Anthropologist Looks at Biology," 214. Form here is unrelated to the Aristotelian idea of form, but refers more to morphology of the whole organism. In other places Ingold does seem to refer to classic ideas, so "[m]any anthropologists are well aware that the basic contrast between physical substance and ideal form, of which the dichotomy between biological and social is one specific instance, is deeply embedded within the tradition of Western thought." Tim Ingold, "Becoming Persons: Consciousness and Sociality in Human Evolution," in *Cultural Dynamics* 4, no. 3 (November 1991): 355-78.

33 It is worth noting that he rejects vitalism, the view that life is inserted into matter, but insists that organisms are 'in life' rather than the other way round. Ingold, "An Anthropologist Looks at Biology," 215.

34 He acknowledges the influence of vitalists such as Henri Bergson and Ernst Cassirer.

else is self-organized in such a way that each part *enfolds* the whole, rather than an order existing in its own space, closed off from other parts. Organic forms therefore emerge as bounded entities that are constituted through perpetual interchange with their environment.[35] This means that both organisms and their environments emerge *together*.

What is Human Life? Exploring Moral Becoming

To summarize so far: Ingold has made some important critiques of standard Neo-Darwinism, including its underlying assumptions, but the process view he articulates seems to lack the specificity that is needed for understanding more precisely what it means to live a moral human life. We are left with a generalized sense of the emergence of humanity that does not quite take into account the radical and transformative nature of humanity's encounter with the transcendent. Therefore, I will now focus on distinctive aspects of humanity that can be tracked in the material record, but also those characteristics of morality, compassion and humility that are much harder to trace. For the sake of brevity, I will focus on two aspects of the evolution of human moral agency which I think are particularly important in understanding and interpreting who we are as moral agents: compassion and humility.

COMPASSION AS MORAL EMOTION

Compassion, which connects human beings with each other and other creatures, is fundamental to living a moral life. Long-term compassion towards others is distinctively human and appeared very early in the evolutionary record, perhaps as far back as *Homo erectus*.[36] Compassion is also a prerequisite for any consideration of something beyond ourselves.

In the very early evolutionary history of hominins, what appear to

35 Ingold, "An Anthropologist Looks at Biology," 216.

36 Penny A. Spikins, Holly E. Rutherford, and Andy P. Needham, "From Homininity to Humanity: Compassion from the Earliest Archaics to Modern Humans," *Time and Mind* 3, no.3 (2010): 303–325. For further discussion see Celia Deane-Drummond, "Empathy and the Evolution of Compassion: From Deep History to Infused Virtue," *Zygon* 52, no.1 (2017): 258–278 and Penny Spikins, *How Compassion Made Us Human: The Evolutionary Origins of Tenderness, Trust and Morality* (Barnsley: Pen and Sword Books, 2015), 126–147.

be distinctive forms of compassion arose that went beyond shorter-term empathetic reactions observable in other primates. This implies a deep history of sustained compassion that is somewhat different from that found in our primate cousins.[37] Tracing the origins of empathy from the hominin ancestral record requires some imaginative interpretation, and this may be one reason why relatively few evolutionary anthropologists discuss it.

Such accounts of compassion are still controversial, due to very small sample sizes and difficulties in interpretation of the evidence, but still worth careful consideration. British evolutionary archaeologist Penny Spikins and her colleagues have done some fascinating work on the possible reconstruction of psychological emotions in the pre-history of the *Homo* lineage.[38] The most anthropologists, Spikins claims, tend to ignore all emotions in human prehistory on the basis that they are far too hard to detect. What kind of archaeological evidence could possibly point to changes in the mental lives of these early humans?

Spikins believes that while this is fraught with difficulties, it is still possible to create a reasonable narrative. It is compassion that was highly significant in the earliest evolutionary history of highly cooperative human societies. Thus, Spikins and her co-authors explain,

> Understanding the evolution and role of compassion in past human species entails recognizing that compassion is more than just a *feeling* that we recognize as personal, but also in a wider analytical perspective it is a biological response, a "motivation to act" whose roots lie in the hormonal and neuronal working of our mind.[39]

Spikins argues that compassion involves an initial step of empathy and then

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37 Interesting work among social carnivores suggests that they were also capable of long-term compassion. See Penny Spikins, (in press) *Hidden Depths: The Origins of Human Connection* (York: White Rose University Press, 2023).

38 Spikins, et al., "From Homininity to Humanity," 303–325. See also Spikins, *How Compassion Made Us Human*, especially 60–81.

39 Spikins et al., "From Homininity to Humanity," 305. Spikins seems to conflate compassion with "caring deeply for each other." Spikins, *How Compassion Made Us Human*, 60, 67. She then finds evidence for such caring from the behaviour implied by the survival of those who could not have survived without such caring.

a strong motivation to help the other in distress. Compassion in these very earliest human societies indicates that compassion is far more sustained and long-term rather than fleeting, as in other primates. Examples to support this case include:

> The most well-known early example of long-term support for an incapacitated individual comes from KNM-ER 1808, a female *Homo ergaster* dated to around 1.5 mya…Examinations of the skeletal remains of this individual have led to suggestions that she was suffering from hypervitaminosis A, a disease caused by excessive intake of vitamin A.[40]

These symptoms can be tracked in the human remains through reduction in bone density and the development of coarse bone growths. The symptoms for sufferers are known from contemporary medical studies to include "abdominal pain, nausea, headaches, dizziness, blurred vision, lethargy, loss of muscular coordination and impaired consciousness."[41] This pathology would have taken many months to develop, which shows that the caretaking in this case must have been long term as the individual could not have survived on their own without the intensive care of others. The point is that this requires *long-term* and *sustained* care of a type that has not yet been found in other primates.

A second example comes from even further back in history, 1.77 million years ago from the well-known Dmanisi archaeological site in Georgia. Spikins' group explains:

> One of the Dmanisi hominins had lost all but one tooth several years before death, with all the sockets except for the canine teeth having been reabsorbed. Since it could only have consumed soft plant or animal foods, it seems likely that it would have needed support from others.[42]

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40 Spikins et al., "From Homininity to Humanity," 309.

41 Spikins et al., "From Homininity to Humanity," 309.

42 Spikins et al., "From Homininity to Humanity,". 309.

A third example is relatively recent, and it is a Neanderthal lineage concurrent with the *Homo sapiens* lineage: Shanidar 1, the "Old Man of Shanidar," dating to around 60–80,000BP is perhaps one of the best-known examples. This individual suffered multiple fractures across his body, with the right side being particularly badly affected, the right arm being described as completely "withered."[43] The individual also received a "crushing" injury to his cranium, possibly causing blindness in his left eye due to the deformity of the skull.[44]

Yet, a close study of the bones revealed that the injuries happened during adolescence, with death at a relatively advanced age (for Neanderthals, thirty-five to fifty years).

Remains of a child (five to eight years old) in the Middle Pleistocene era who suffered severe birth defects of the cranium (*craniosynotosis*) have also been found. This gives strong evidence that, in this case at least, compassion extended to babies and young children.

Spikins and her research team compare this evidence for what they believe is a deep commitment to care for young individuals over the long term with cemetery evidence for abandonment of babies suffering from the same condition in modern human societies.

They report other examples of early upper Paleolithic individuals suffering from severely debilitating conditions such as *Acromesomelic dysplasia*. According to their definition, compassion, which finds expression in the human ability to extend care and commitment to others in a sustained way, can include commitment to animals, or even objects and perhaps even ideas.

If compassion, as they define it, is part of a slow, more sporadic process that included *flickerings* of compassion rather than development through a single process, as for complex cognition,[45] then it might be possible to track compassion alongside the tracing of symbolic thought in general. This would be consistent with the thesis that the evolutionary lineage *Homo* was a slowly evolving community niche. This complex dynamic system in

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43 Richard G. Klein, *The Human Career, Human Biological and Cultural Origins* (Chicago: University of Chicago Press, 1999), 333. Cited by Spikins et. al. "From Homininity to Humanity."

44 Spikins et al., "From Homininity to Humanity," 309.

45 Marean W. Curtis, "An Evolutionary Anthropological Approach on Modern Human Origins," *Annual Review of Anthropology* 44 (Oct. 2015): 533–566.

an evolutionary perspective of compassion included cognitive, social, and ecological components interacting with each other and with the genotype in a complex feedback system.[46]

This hybrid understanding of compassion that is then extended to objects is rather different from Martha Nussbaum's philosophical definitions of compassion, which are more closely tied to cognitive judgments about whether what is happening is fair or not for an individual.[47] If Nussbaum's analysis is followed, then it is unclear when the judgments of compassion in terms of size (this is a serious event), non-desert (this shouldn't have happened to you), and flourishing (your livelihood matters to my own wellbeing) surfaced in human communities or how these relate to any evolutionary "fitness" requirements for empathy.

It is likely that finding more subtle tendencies of judgment *within* compassion in archaic communities will be impossible, which means that there will always be a gap between the different accounts. It is difficult, for obvious reasons, to work out more precisely *why* the commitment to long term care was present in these very early human communities. Vague notions that such actions might help strengthen community bonds, as well as references to mathematically based evolutionary theories about an individual's reputation, are sometimes deployed to explain extreme altruism towards others,[48] but do not adequately address the issue.

While religion is not mentioned, an intriguing possibility is that the human ability to exercise deep and sustained compassion was also associated

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46 Agustín Fuentes, "Integrative Anthropology and the Human Niche: Toward a Contemporary Approach to Human Evolution," *American Anthropologist* 117, no.2 (2015): 302–315.

47 Martha Nussbaum, "Compassion: Human and Animal," in *Understanding Moral Sentiments: Darwinian Perspectives?* Ed. Hilary Putman, Susan Neiman, and Jeffrey Schloss (London: Transaction Publishers, 2014), 123–50. See also Martha Nussbaum, *Upheavals of Thought: The Intelligence of Emotions* (Cambridge: Cambridge University Press, 2001).

48 This opens a huge literature on the evolution of altruism and cooperation that is discussed in a number of books and is outside the scope of this lecture. Such literature on altruism includes, for example, Martin A. Nowak and Sarah Coakley, *Evolution, Games and God: The Principle of Cooperation* (Cambridge, MA: Harvard University Press, 2013); Stephen G. Post, Lynn G. Underwood, Jeffrey P. Schloss, and William Hurlbut, eds., *Altruism and Altruistic Love: Science, Philosophy and Religion in Dialogue* (Oxford: Oxford University Press, 2002).

with capacity for an affiliation with a loving transcendent Other. Dominic Johnson has argued that religion evolved to deal with the freeloader problem in mathematical accounts of cooperation. God is then a divine punisher who is watching you even when others are not.[49] Compassion is certainly very ancient in the human evolutionary record, far older than the first flickerings of what looks like symbolic thinking tracked by anthropologist Marc Kissel.[50]

Spikins research should not leave the romantic impression that such societies were necessarily virtuous, reflecting a distant memory of an idyllic time when human societies lived and worked together in peace. Alongside evidence for forms of human compassion that Spikins et al. have elaborated, there is also good evidence for its opposite, namely the ability to be violent towards each other expressed eventually in peculiarly human forms of cruelty.[51]

If compassion points to the possibility of envisaging a loving, transcendent Other, were there behavioral indicators that might indicate that very early hominins considered that there was indeed something more to human life than simple survival?

The Birth of Humility[52]

Beautiful handaxes, such as the 250,000-year-old West Tofts handaxe crafted around a fossil scallop shell,[53] show an aesthetic sense and perhaps also a greater sensitivity to how others might perceive oneself—and, more speculatively, a sense of the transcendent. It is also possible that the handaxe itself was viewed as something living: working with the material to elicit—and celebrate—what

49 Dominic Johnson, *God is Watching You: How the Fear of God Makes us Human* (Oxford: Oxford University Press, 2015).

50 Marc Kissel, "What Can Anthropology Say About the Evolution of Human Wisdom?" in *The Evolution of Human Wisdom*, ed. Celia Deane-Drummond and Agustín Fuentes (Lanham: Lexington Press, 2018), 25–48.

51 Agustín Fuentes, "Cooperation, Conflict and Niche Construction in the Genus Homo," in *War, Peace and Human Nature: The Convergence of Evolutionary and Cultural Views*, ed. Douglas Fry (Oxford: Oxford University Press, 2013), 78–94.

52 For more details of this discussion on humility see Celia Deane-Drummond, "Searching for the Soul of Homo: The Virtue of Humility in Deep Evolutionary Time," in *Theology and Evolutionary Anthropology: Dialogues in Wisdom, Humility and Grace*, ed. Celia Deane-Drummond and Agustín Fuentes (London: Routledge, 2020): 182-202.

53 Spikins, *How Compassion Made Us Human*, 203.

was dimly perceived in the material. The handaxes of the Acheulian show incredibly high levels of symmetry that are technically extremely hard to achieve.[54]

Archaeologists have shown that the skill in making even the simplest lithic tools is likely to have demanded hundreds of hours of practice.[55] Dietrich Stout suggests:

> Discovery of optimal technologies might be facilitated by social scaffolding, explicit instruction or high-fidelity imitation of an expert model, but minimally requires focused attention, self-monitoring and inhibition of automatic reactions during repetitious practice.[56]

Classic explanations that this marks the arrival of "man the toolmaker," giving these hominins superiority in hunting success, is only a partial explanation, since it fails to explain *why* there is a change in morphology of the stone tools over time, given that all the morphologies were equally multifunctional. Along with physical skill and cognitive development associated with lithic crafts there is also some evidence of enhancement in personal qualities of self-control and persistence and the ability to imagine alternatives.[57]

As well as possessing a native practical wisdom in how to make such objects, those aspects of self-restraint characteristic of humility are likely to have been involved. The classification of humility as a moral virtue is not universal, stemming from resistance to its worth by many influential post-Enlightenment writers, including Friedrich Nietzsche in the nineteenth century and David Hume in the eighteenth century, who described humility

54 Even creating the simplest lithic tools is likely to have demanded hundreds of hours of practice. Dietrich Stout, "Stone Toolmaking and the Evolution of Human Cognition," *Philosophical Transactions of the Royal Society B. Biological Sciences* 366 (2011): 1050–1059.

55 Stout, "Stone Toolmaking and the Evolution of Human Cognition." It seems that these early hominins scavenged and recycled specimens discarded by others and the landscapes now filled with lithic artifacts are like a library of design and production processes.

56 Stout, "Stone Toolmaking," 1057.

57 Peter Hiscock, "Learning in Lithic Landscapes: A Reconsideration of the Hominid "Toolmaking" Niche," *Biological Theory* 9, no.1 (2014): 27-41.

(along with celibacy, fasting, penance, mortification, self-denial, silence, solitude and the "whole train of monkish virtues") as not just irrelevant for the moral life and "everywhere rejected by men of sense" since "they serve to no manner of purpose, neither advance man's fortune in the world, nor render him a more valuable member of society," but also, in addition, they "stupefy the understanding and harden the heart, obscure the fancy and sour the temper." He continues further that such tendencies "place them in the catalog of vices."[58]

Yuval Norah Harari characterizes the achievements of human history, including the evolution of humanity, as a kind of anti-humility, a deliberate and aggressive attempt by *Homo deus* to become divine, eventually collapsing traditional religious practices.[59] *Homo sapiens* turned *Homo deus* is poised to lose control. Harari argues for compassion towards animals on the somewhat flimsy basis that perhaps we might no longer be the ones in control of our futures, so if we continue to treat animals without respect, the same might be meted out on us through our AI creations.

Aquinas believed that the moral life, which meant right relationship of self to others, including God, required the exercise of right reason over our passions and desires. Self-control does not in this context mean a lack of emotional attunement with self and others, but rather the ability to self-regulate accurately and with sensitivity to another's emotional state. By expelling pride, humility removes obstacles to the reception of divine grace, so, in this sense, is the foundation of the spiritual life. This does not take away from the central role that charity (love) plays in the spiritual life.[60] A retrieval of a classical understanding of the virtue of humility and its relationship to other virtues can help tease out the kinds of qualities and habits of mind that are important in a well-functioning human community.

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58 David Hume, *An Enquiry Concerning the Principles of Morals: A Critical Edition*, ed. Tom Beauchamp (New York: Oxford University Press, 2006), 9, 73.

59 Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow* (New York: Harper Collins, 2017). For a review, see Celia Deane-Drummond and Agustín Fuentes, "Review Article: *Homo Deus: A Brief History of Tomorrow*," *Philosophy, Theology and the Sciences* 5, no. 1 (2018): 127–137.

60 Thomas Aquinas, *Summa Theologiae*, trans. Laurence Shapcote, ed. John Mortensen and Enrique Alacarón (Lander: Aquinas Institute, 2012), IIaIIae, q. 161, a. 5.

Are We Alone?

Another set of material results which points to the fundamental importance of the transcendent for a distinctively human way of life comes from work with another hominin species discovered relatively recently in South Africa, whose life history overlapped with that of *Homo sapiens*. Lee Berger and John Hawks outline some remarkable findings about *Homo naledi*, that have only just come to light.[61] The account is astonishing because in some respects it was so unexpected among evolutionary anthropologists, who assumed from morphological assessment that these fossils dated to around 1.5 million years ago. Direct dating of these fossils from the Dinaledi Chamber in the Rising Star cave system in South Africa shows, instead, that they were deposited somewhere between 236 and 335 thousand years ago, thus in the later Middle Pleistocene, coincident with that of our own species, *Homo sapiens*.

A remarkable number of specimens were found in the cave – 1,500 fossils representing fifteen individuals. They are the largest collection to date of a single species of a close relative of our species. Although Acheulean and Middle Stone Age tools are usually associated with *H. sapiens*, it is also possible, at least on the available evidence, that *H. naledi* contributed to these remains. Exactly where *H. naledi* appears in the phylogenetic evolutionary tree is uncertain. The evidence points towards an ancient phylogenetic origin, most likely 900 thousand years ago, rather than a closer date to *H. sapiens*, as otherwise some of the morphological characteristics would be reversals to an earlier state. Or perhaps it was a result of hybridization between two hominin subspecies? H. naledi shares many of the anatomical characteristics of both *Homo sapiens* and *Homo erectus*.[62] Hence, it may be more accurate, as Rebecca Ackermann and Lauren Schroeder suggest,[63] to view all these different subspecies of *Homo*

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61 Lee Berger and John Hawks, "On *Homo naledi* and its Significance in Evolutionary Anthropology" in *Theology and Evolutionary Anthropology: Dialogues in Wisdom, Humility and Grace*, ed. Celia Deane-Drummond and Agustín Fuentes (London: Routledge, 2020): 51-68. Lee Berger et al., "*Homo naledi* and Pleistocene Hominin Evolution in Subequatorial Africa," *Short Report*, *eLife* (May 2017): 1–19.

62 DNA evidence would clear up some of the ambiguities in lineage, but attempts to extract DNA from *Homo naledi* have so far failed. Berger et al., "*Homo naledi* and Pleistocene," 8.

63 Rebecca Ackermann and Lauren Schroeder, "The Emergence of Complexity and Novelty in the Human Fossil Record," in *Theology and Evolutionary Anthropology:*

in a more closely reticulate relationship with each other.

This discovery of a very small-brained hominin who also seemed to have the ability to grasp with the hand, but who walked upright, upsets as well the view that gradually *Homo* lineages acquired bigger and bigger brains with associated cognitive capacities. *H. naledi* had relatively small brains, more like *Australopiths*, the most ancient of human relatives, combined with a stature, lower limb, and foot anatomy of *H. sapiens*.

The wrist, hand, and fingertip morphology of *H. naledi* share many of the same characteristics of Neanderthals and *H. sapiens* that are missing in other hominin species. It is reasonable to speculate that *H. naledi* could make tools. Their small dentition also points to a higher quality diet that includes meat and plant resources. If that is the case, then, despite their relatively small brains, it was possible for *H. naledi* to engage in tool use, and though so far there is no direct published evidence yet for making this assumption, the possibility is still being researched.

It is the mortuary behavior of *H. naledi* that I think deserves special comment, since this practice is clearly documented by the way the bones have been deposited in the caves. The Lesedi Chamber, located deep inside the cave system, is only accessible by a very narrow chute. Berger and colleagues reject the idea that these were accidental death traps or that they were the result of inner movement by carnivores within the cave system: the condition of the fossil remains refutes both possibilities. It is also unlikely that *H. sapiens* were responsible for the deposition, since there were no markings on the bones that were the habitual practice of our species.

Such discoveries about *H. naledi* immediately raise some intriguing questions about what could have been going on in the minds of these very early hominins. Why, for example, did they choose to deliberately bury their dead through mortuary practices that must have been difficult and require a great deal of patience and even loving respect for the deceased? Was this the first dawning of an awareness of an afterlife, a sense that there is continuity as well as discontinuity after death, a transcendent way of perceiving the world as well as simply a transactional one?[64] Whatever the explanation, four issues

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Dialogues in Wisdom, Humility and Grace, ed. Celia Deane-Drummond and Agustín Fuentes (London: Routledge, 2020): 29-46.

64 Maurice Bloch, "Why Religion is Nothing Special but is Central," *Philosophical*

stand out in the light of the discussion about humility.

First, those who undertook this practice perceived those who died in humble respect: they recognized qualities in them that they wanted to preserve and protect.

Second, and more speculatively, there was a dawning of consciousness of another spiritual realm coterminous with our own, where humble submission to that energy and power drove specific mortuary practices. Such practices are preludes to a religious sense that eventually dawned in the human community.

Third, *H. naledi* takes away the pride of *H. sapiens* as being the *only* species capable of highly sophisticated activities—including implicitly religious activities.

Finally, perhaps *H. naledi* also contributed to our own lineage in ways yet to be discovered through further research. Given the size of the neocortex, such research also implies that cortical size alone is not a prerequisite for perceiving the transcendent, even though, of course, eventually *H. sapiens* survived and *H. naledi* did not.

CONCLUDING REMARKS

We arrive, therefore, with far more questions than answers about what it means to live a human life. How has human becoming moved from careful burial practices in that tiny, small brained *Homo naledi* to the sophistication of more abstract cognition in the theological reflection characteristic of someone like Thomas Aquinas? I have argued in this lecture that understanding our humanity in terms of liminality—in relation to our animality and the transcendent—counters any position that human life is simply about factual aspects of our biological existence. Understanding human life in a dynamic relationship with other beings, including the more mysterious unseen, begins to provide insights into the rich processes and narratives of human becoming. Instead of understanding a sense of the transcendent as an add-on arising from belief in a punitive God (as some evolutionary explanations of religion contest), human life unfolds even as it enfolds other beings, becoming moral

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Transactions of the Royal Society B: Biological Sciences 363, no. 1499 (2008): 2055–2061. Bloch downplays the experience of religion in assuming the explanatory power of emergence theories, but his admission of distinctly human transcendental practices is important.

through enhanced practices of compassion and humility, to name just two dispositions. The possibility of any moral becoming should not be understood as unidirectional, but akin to the ancient practice of wayfaring.

The threat of sinking deeper into vice and other forms of violence exists even as humanity has the ability to become more compassionate, tolerant, grateful and so on. I have stressed in this lecture more positive attributes, not least because there is a common tendency to imagine our ancient past as brutally violent.

As ancient theologians and philosophers have stressed for centuries, a distinctively human life consists of a mixture of tendencies for both deep compassion and abject cruelty. Understanding human belonging as orientated towards the next life, if understood in the light of belief in a loving and compassionate God, could arguably enhance tendencies towards compassion in this life rather than its opposite. Some fascinating examples of tool use, deliberate ancient burials among hominins living in the same era as *Homo sapiens*, along with their relatively small brains, points to a transcendent sense of belonging to the next world being *coincident* with earliest human becoming, rather than added on much later in human history with the development of sophisticated religious rituals. If this is the case, then the human being's capacity for the transcendent is a fundamental aspect of what human life means and therefore cannot be suppressed, even though it may take on different expressions in response to the pressures of modern cultural change.

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SESSION 1

Astrobiology

What is the current state of astrobiology? How likely is it according to experts that there is extraterrestrial life and how soon might we discover it, if it exists? If life has started in multiple places, how does it reshape our understanding of Earth and our self-understanding of our place in the universe?

ASTROBIOLOGY - I

Initial Reflections

— JONATHAN LUNINE —
PROFESSOR OF ASTRONOMY, CORNELL UNIVERSITY

There is a tremendous difference between the implications of finding microbes and finding self-aware intelligent life (ETI). The former is all we will find in our solar system and requires sampling of material from moons and planets that might hold life. The latter requires scanning the galaxy for active or inadvertent signals. The radio search for ETI, pioneered at Cornell in 1959, has been met with no success. A third approach, to search for the effects of a biosphere on the atmosphere or surface of planets around other stars, requires very high resolution spectroscopy that will require a new generation of space telescopes beyond JWST. JWST might be able to tell us whether an exoplanet (a planet around another star) is *habitable*, but not whether it *is* inhabited.

The search for microbial life in the solar system is challenging but feasible. Conceptually, it is not an easy project to explain because the cultural prejudices about where life might be are at odds with what has been discovered by planetary exploration. Before the space age (seventy years ago), Mars was thought to be vegetated and Venus habitable (if rather humid). By the mid-1970s it was clear that neither the surface of Mars nor the surface of Venus can support life, each for different reasons. (The idea of microbial life in the clouds of Venus remains a speculative distraction). By the 1990s, Mars exploration from orbit discovered that the early environment of the Red Planet was much more Earth-like and could have supported life. Then, the era of roving surface exploration began, and at present, two sites where conditions suitable for life long ago are being examined by sophisticated rovers, one of which (Perseverance) is encapsulating samples for eventual return to Earth in the 2030's. It is

not expected that living microbes will be brought back—at best, the rovers will return with fossils, but very careful precautions are being developed to prevent contamination if they should find living microbes.

Beyond the asteroid belt, in what is called the outer solar system, a moon of Jupiter (Europa) and two of Saturn (Titan, Enceladus) have been found to host liquid water oceans beneath icy surfaces. There are varying levels of certainty that other moons may also host oceans. Europa's water ocean is salty, and twice the volume of Earth's surface ocean. We know little else about it, including whether there are carbon-bearing molecules in the ocean. Europa's surface is bombarded with a sterilizing radiation field, but the ocean is protected by kilometers of ice. The practical search for life will depend on the finding of places where fresh ocean material is expressed to the surface along fractures as Europa is flexed by Jupiter's powerful gravity field. A mission called Europa Clipper will launch to Jupiter in 2024 to learn more about the ocean and find places where fresh ocean material may be present, for eventual sampling by a lander. That lander would carry instruments designed to detect microbes.

More is known about Enceladus than the others, thanks to direct sampling of a plume of gas, dust, and ice shooting out of the south pole of this small Saturnian moon, done by instruments aboard the Cassini Saturn Orbiter, which explored the Saturn system from 2004–2017. Water ice with salt, carbon-bearing molecules, and mineral grains have been found. The source of the plume is a subsurface ocean, about the volume of Lake Superior, which was detected in several ways by Cassini. The results of this mission show that the ocean of Enceladus, which lies five to thirty kilometers under an ice cap that protects it from the vacuum of space, is capable of supporting microbial life as we know it. Future missions are being proposed to try to detect the signs of life in molecules and grains in the plume or to directly collect and sample living cells from either the plume itself or deposits on the surface. Such missions will not arrive at Enceladus until around 2040 or later.

Saturn's giant moon, Titan, which is larger than the planet Mercury, has a deep subsurface water ocean detected by Cassini. However, more interesting is Cassini's finding that Titan is a moon with a dense nitrogen atmosphere and a surface climate driven not by water but by methane. Dotting the north polar icy landscape are lakes and seas made of liquid methane—perfectly stable in the cold conditions that result from Titan's great distance from the Sun. There are beaches of organic sands, waves, methane rain, and islands of

water ice in the methane seas. Could a form of life evolve and exist in liquid methane seas? This is an intriguing question which, should the answer be yes, says that the occurrence of life requires not narrow conditions, but simply conditions suited to the raw materials at hand. The answer to this question, though, awaits future missions.

Should microbial life be found on bodies distant enough from Earth that they are not the result of cross-fertilization, it would suggest that the origin of life is not a divine act separate from cosmic evolution itself, but a part of that evolution. This says nothing one way or the other about the existence of God—the Thomistic view of the God who creates everything ex nihilo in an ontological sense and can certainly design reality so that ever more organized structures evolve in a temporal sequence in that creation. St. Thomas himself wrote that the diversity of things is a sign of the divine ordering of things, and extraterrestrial life would be part of that diversity.

And ETI's? Marie George has more to say than I. Suffice to consider the likelihood that, were ETI's to exist, we wouldn't understand them or even know they were there. My dog and I have a very limited range of interaction despite our co-evolution: I can't ask him to cook dinner or pay the bills, and he can't explain what it's like to smell things with such acuity. Now imagine two self-aware beings separated by billions of years of evolution, with one of them ten million or a hundred million years "ahead" of the other. We might as well imagine we can understand angels (when they don't care to have us do so).

ASTROBIOLOGY - II

Initial Reflections

— MARIE GEORGE —
PROFESSOR OF PHILOSOPHY, ST. JOHN'S UNIVERSITY

My thesis is: if we take as our starting point that the Second Person of the Trinity became incarnate as a human being and saved us by His cross and Resurrection, this does not exclude the possibility that intelligent extraterrestrials exist, but it does render such an existence unlikely.

I am not talking about physicist Paul Davies's claim that ETI existence is incompatible with "the doctrine that man is God's supreme and special creation."[1] This claim is incorrect for several reasons. First, we are God's supreme creation on earth. Secondly, we are special insofar as we, unlike non-rational animals, are called to an eternal destiny. Lastly, the Word became incarnate as one of us, which is not the case for all rational creatures, e.g., the angels.

My arguments are as follows: if ETIs exist, they are either fallen or unfallen. If they are fallen, surely God, in His great mercy, would redeem them. However, Scripture indicates that all who are redeemed are redeemed through Christ:

> He is the head of the body, the church; he is the beginning, the firstborn from the dead, so that he might come to have first place in everything. For him all the fullness of God was pleased to dwell, and through him God was pleased to reconcile to himself all things, whether on earth or in heaven, by making peace through the blood of his cross.[2]

1 Paul Davies, "Biological Determinism, Information Theory, and the Origin of Life," in *Many Worlds*, ed. Steven J. Dick (Philadelphia: Templeton Foundation Press, 2000), 15.

2 Col. 1:18-20 NRSVCE

While it is possible for God to decide to save fallen ETIs through Christ's sacrifice, there are reasons to think this did not occur. So many of the details of Christ's story are so carefully fitted to the human beneficiaries of his salvific act that it is hard to see how another material rational could fit in this story. For example, Christ is not the new ETI, but the new Adam. Christ does not provide ETIs with the most suitable role model and subject of devotion. And the ETI version of St. Anselm's "divine dilemma" would lack the same neat resolution which holds in our case, for it would not be an ETI who made reparation for the ETI fall.

Hebrews 2:14-16 is especially telling with respect to whether Christ's sacrifice was intended to redeem ETIs:

> Since, therefore, the children share flesh and blood, he himself likewise shared the same things, so that through his death he might destroy the one who has the power of death, that is, the devil, and free those who all their lives had been held in slavery by the fear of death. For it is clear that he did not come to help angels, but the descendants of Abraham.[3]

It is apparent from this that Christ wanted to share the same flesh and blood as those he saved.

As for unfallen ETIs, it is questionable whether God would create a rational species in which no individual sinned. Granted, we only know of our case and that of the angels. Still, in both cases, some individuals sinned. This highlights the reality of free will and grace in a way that would not be the case if no individual sinned. In addition, it is hard to see how unfallen ETIs could play a pertinent role in a universe that centers on Christ. Some suggest that the Word could become incarnate in their nature. This is indeed possible. The Word is hardly exhausted by taking on human nature. However, many Scripture passages speak of the Word's incarnation, death, and resurrection as the central event in the universe's history. The "Cosmic Christ" passages are the basis for the Catechism of the Catholic Church's affirmation:

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3 Hebrews 2:14-16

> In the Symbol of the faith the Church confesses the mystery of the Holy Trinity and of the plan of God's "good pleasure" for all creation: the Father accomplishes the "mystery of his will" by giving his beloved Son and the Holy Spirit for the salvation of the world and for the glory of his name. Such is the mystery of Christ, revealed and fulfilled in history according to the wisely ordered plan that St. Paul calls the "plan of the mystery" and the patristic tradition will call the "economy of the Word incarnate" or the "economy of salvation."[4]

Elucidating the cosmological meaning of Christ's Resurrection, the Catechism says:

> The eighth day. But for us a new day has dawned: the day of Christ's Resurrection. The seventh day completes the first creation. The eighth day begins the new creation. Thus, the work of creation culminates in the greater work of redemption. The first creation finds its meaning and its summit in the new creation in Christ, the splendor of which surpasses that of the first creation.[5]

If the Word (or other Divine Person) were to become incarnate in an ETI nature, it would be difficult to see Christ's incarnation as human to be the universe's central event. And if no Divine Person became incarnate as ETI, it is hard to see what role unfallen ETIs play in a universe that centers upon Christ.

On the assumption that the Word incarnate as ETI had a mother, a question would arise as to who would be Queen of Heaven. Note that the theological arguments by fittingness that I have been presenting are predicated upon what we know God has done in the universe. If ETI were to exist, there would have to be some way of fitting them in the story, as awkward as this appears.

A general objection against the existence of ETIs emerges from the notion that, in order for the universe to be well ordered, there must be interconnection between its principal parts. As Aquinas, commenting on Aristotle, puts it when

4 *Catechism of the Catholic Church*, 2nd ed. (Vatican City: Vatican City Press, 1997), 1066, http://www.scborromeo.org/ccc/p2.htm#1066.

5 *Catechism of the Catholic Church*, 349.

arguing against a multiplicity of worlds: "But plurality of realms is not good: Just as it would not be good for diverse families which did not communicate with each other to be in one house."[6] ETI existence would derogate from God's wisdom, for the universe would be deficient as to the interactivity of its citizens, assuming that the current pessimistic prognosis for future communication between earth and other habitable parts of the universe is accurate. I would be interested in hearing the thoughts of an astronomer on SETI, and also on the Fermi Paradox, according to which if ETIs existed, they would already be here.

Another question I have concerns the Drake equation. One of the unknowns is the probability of life arising and complexifying. The presence of this unknown impacts the ability to estimate another variable in the Drake equation, namely, the number of habitable planets. As Michael Crowe points out, a planet may be similar to Earth without being similar to it in those ways that are crucial for life to begin and complexify. Until we know what these factors are, a planet that is Earth-like in some ways may turn out to lack something needed for life to originate and complexify. A certain number of scientists favor the Rare Earth hypothesis, which proposes that features that make the Earth habitable are unlikely to be found on another planet. I would be interested in hearing what Jonathan Lunine has to say here, given he is the author of *Earth: Evolution of a Habitable World*.

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6 Thomas Aquinas, *In Duodecim Libros Metaphysicorum Aristotelis Expositio*, ed. Raymond M. Spiazzi, OP (Rome: Marietti, 1950), Bk. 12, lect. 12, no.2661-63. Translation is my own.

POST-CONFERENCE REFLECTIONS
FROM JONATHAN LUNINE AND MARIE GEORGE

JONATHAN LUNINE

I want to thank the organizers for the opportunity to have a stimulating dialog with Marie George, and also to express my regrets that my planned in-person participation fell victim to "the great billion-year war between ribosome- and capsid-encoding organisms."[7]

We hold firmly that God is the author of all Creation. What shall we make, then, of the messiness of evolution, whereby the number and variety of life forms on Earth has been much greater over geologic time than that which exists today? And what should we make—assuming we discover such—of the presence of alien microbes in the oceans of Jupiter's moon Europa and Saturn's Enceladus, or of exotic biology in the methane seas of Saturn's moon Titan?

Aquinas's answer comes in Part One, Chapter 102 of his *Compendium Theologiae*. Following from his previous chapter's discussion of why all things were made—that they might be made like the divine goodness—St. Thomas goes on to consider why there is multiplicity and distinction among organisms.

> [T]he multiplicity and distinction existing among things were devised by the divine intellect and established in things so that the divine goodness might be represented by created things in various ways, and that different things might participate in the divine goodness in varying degree. All this was so that a certain beauty might shine forth from the very order existing among diverse things, a beauty which

7 Patrick Forterre and David Prangishvili, "The great billion-year war between ribosome- and capsid-encoding organisms (cells and viruses) as the major source of evolutionary novelties," *Annals of the New York Academy of Sciences* 1178, no. 1 (Oct. 2009): 65-77.

would direct the mind to the divine wisdom.[8]

What is novel about alien microbes is that they would add a different kind of multiplicity and distinction to what evolution has produced for life on Earth. If, as would be likely given the vast distances from our own planet, microbes of the outer solar system would have come to be and evolved separately from life on Earth, then they would represent a novel kind of diverse thing. Of course, Aquinas didn't know about evolution, but given that both the origin and evolution of organisms are secondary causes through which God, the Uncaused First Cause, works, I think that what Aquinas has to say about the beauty shining forth from the "very order existing among diverse things" applies just as well to the putative existence of extraterrestrial life as to the diversity of life on Earth.

The theological problems associated with rational and ensouled extraterrestrial life (ETIs) have been carefully laid out by Marie George and I have nothing useful to add. But I don't expect that we will ever face these problems: either ETIs do not exist, or the contingent nature of evolution and the vast timescales of cosmic evolution put them out of our reach or recognition.

Some may despair at such a view. I would have, in my youth. But now, meeting intelligent extraterrestrials means far less to me than meeting the author of all things, as Paul promises us in 1 Corinthians 13:12, "then I shall know fully, as I am fully known."

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8 Thomas Aquinas, *Compendium Theologiae*, trans. Cyril Vollert, S.J., (St. Louis: B. Herder Book Co., 1947), Part 1, Ch. 102.

MARIE GEORGE

I agree with Jonathan Lunine that it is unrealistic to think that we could have a meaningful conversation with ETI via radio signals, given the time lapse between receiving and sending messages, not to mention the time required for one of us to decode the other's language. I do think that if ETIs arrived on earth, they would figure out our language. Rational beings eventually arrive at the general concept of language, that is, that sensible signs can be used to express thoughts. Helen Keller, despite being unable to see and hear, had that *aha* moment via signs presented to her sense of touch. Now, while one would expect ETI senses to differ from ours, nevertheless, it seems impossible that they could get the idea of traveling to a distant planet, if they could not see. Also, as Aristotle points out, it is difficult or even impossible for any organism to stay alive without a sense of touch to warn it of imminent threats to its bodily integrity, such as excessive heat. The question then becomes: would we have anything to talk about or would our lives be so different that we would have nothing to say to each other? We could certainly talk about space travel! They must have the concept of escape velocity if they made it off their planet—and similarly for other scientific concepts related to space travel. Another thing we would hold in common is the need to nourish ourselves. Their way of doing so may be very different from ours, but we've already figured out how organisms as different as sulfur-oxidizing bacteria, E. coli, and green plants do so, so there's no reason to think that we could not eventually talk to them about their mode of nutrition. In addition, rational beings—by the very fact of being rational—are created in the image of God. So ETIs hearts, like ours, would be restless until they rest in God. Consequently, they would naturally ask whether God exists, and this could be a topic of conversation.

Jonathan Lunine's talk focused on microbial life, so I didn't get a chance to ask him what he thinks of the "Rare Earth" hypothesis, which holds that the earth has a unique set of features unlikely to occur on another planet. I got the impression from his book, *Earth: Evolution of a Habitable World*, that he might agree. For example, he discusses whether plate tectonics and the carbon cycle explain how the Earth's climate stabilized over time, and he observes that plate tectonics do not seem to be found on other

planets in our solar system. He notes that the earth has a relatively stable axis, apparently due to the Earth's moon, which is unusually large. The absence of such features may not preclude existence of microbial life, given the oceans of Europa and Enceladus may harbor life, but I suspect these features are needed for rational beings to evolve. I am interested in the Rare Earth hypothesis, since I maintain that Christian belief renders ETI existence improbable (not impossible), and this thesis would gain credibility if scientific data supported it.

SESSION 2

Linguistics

Can we identify necessary features of language? Are they unique to humans? Is there any sense in which we can say other species or lifeforms use language?

LINGUISTICS - I

Some Initial Thoughts on Language

— JONATHAN TRAN —
PROFESSOR OF PHILOSOPHICAL THEOLOGY, BAYLOR UNIVERSITY

I FIRST STARTED THINKING about language while reading Wittgenstein as a religious ethics graduate student. At the time, my teacher told me it would take ten years to understand Wittgenstein on language. It has taken at least that long. And then I realized Wittgenstein was just the beginning, and just one beginning.

After writing a book in which I tried to understand American habits of speech regarding time and war, I turned to a book on Foucault's philosophy. It was Foucault's account of human action and agency that turned me full-time to thinking about speech as such, this after a comment Arnold Davidson made about Stanley Cavell taking up action and agency by placing them within "Wittgenstein's vision of language." Since then—about a decade now—my research has centrally focused on language, and specifically the conventions that populate the human form of life.

For example, I recently wrote a book called Asian Americans and the Spirit of Racial Capitalism. While the book has received some small amount of attention for its arguments related to race and racism, I understand the book as primarily the product of thinking long and hard about language. Namely, attention to human speech made me distrustful of accounts of racism that ignore how concepts of race get conventionalized within political economic structures and systems. The implication, which cannot come in our political moment without some controversy, is that much and perhaps most of what our antiracism amounts to barking up the wrong tree: say, fixating on constituent racial identities and their built-in antagonisms rather than the political economies that build in those antagonisms. While controversial, this implication follows from how I think about language.

For the last three years, in service to the John Templeton Foundation grant "Collaborative Inquiries in Christian Anthropology," I have moved on to the scientific study of language. Some might say, "Finally!" and narrate this part of my research agenda as having finally arrived at what studying language really entails, science. There are certainly parts that feel that way. But as I'll say in a second, that's not how I tell the story. Some of what I have encountered in these last years is quite familiar and falls in line with what I've always understood Wittgenstein and folks like Austin or Quine or Davidson to be saying about language: that language is best understood as, according to Michael Tomasello's characterization, "usage-based." Again, familiar territory.

But then there is a large stretch of language study that has come as a shock, both shocking in its claims and implications and shocking in that one could be, as I was for a decade, deeply engaged on issues of language without ever really encountering this approach to language. Here I mean the revolution Chomsky ushered in when he first chalked up Skinner's conventionalism to so much behaviorism, subsequently dismissing much of the analytic tradition informing my work with a mere wave of the hand. By positing language as a basic faculty of the brain and understanding its operations in terms of generativity and computational structuring, Chomsky makes language something that is internal, individual, and intuitive. This has the effect of dissolving any number of philosophical problems that have not so much confounded as comprised the analytic tradition (for example, indeterminacy about translation and inscrutability as to reference). It also pours cold water on much of Cavell's ordinary language philosophy, that comfort zone of mine, by reducing questions of agreement (Cavell's corpus can be summarized as an obsession with community agreement, what makes agreement possible and what happens when agreement comes apart, as it readily does given its conditions of possibility) to tertiary matters of "sociology of group identification." What people like Cavell consider all important, Chomsky the linguist seems to consider not important at all (though Chomsky the justice warrior likely considers these matters important, but since he himself divorces the two Chomsky's, so will I). That is to say, all that has motivated my interest in language finds markedly little love in Chomsky's non-dualist empirical method.

Over the course of circuitously making good on that empiricism, Chomsky's biolinguistics, in trying to think through the biological basis

of language, gets closer to usage-based theories. This is because, following Dobzhansky, "nothing in biology makes sense except in the light of evolution" such that one has to—if one is committed to making sense—try to think about language in terms of its evolutionary development. While Chomsky initially thought that evolutionary biology set itself on a wild goose chase, off after antecedents when antecedents belie the point, bio-linguists increasingly feel compelled to account for language by situating it within the story of human development. This puts them in the company of those usage-based theories that similarly want to think about origins, adaptation, and what Tomasello calls "natural histories." Usage-based theories of language come downstream from thinking that language fundamentally does things, and so aids humans in their practical projects. If so, then examining human usage entails examining natural histories, where "natural" carries both senses: biological and characteristic (involving both efficient and formal causalities). Greater sophistication in how scientists think about everything from genetic endowment to human learning to innateness have made biolinguistics and usage theories strange bedfellows in the joint task of figuring out how in fact evolution helps language make sense.

This leads me to saying something, which I do now in closing, about where God figures in. If biolinguistics and usage-based theories each leave much to be desired, the accomplishments of their newfound integration would seem to leave little room for God, as an explanatory principle or anything else for that matter. We know that Christianity puts a lot of weight on language, claiming not only that language is able to convey things about God, but that God is best understood as a Word, the incarnate Christ portrayed at the opening of John's Gospel. It is hard to imagine greater affirmation that words matter than claiming God as a word. Perhaps it is only an aversion to religion that keeps linguists from hanging over their doors, "In the beginning was the Word and the Word was with God."

Responding to that aversion, theologians might have this to say: explanations come to an end. Internally, this motivates the work of explanation toward further explanation, answering the unanswered, pushing out past what we know and think we know. This Chomsky understands in terms of problems, and science he thinks is in the business of solving problems. And then there is what cannot be explained—explanations coming to external ends—the realm of mystery, the unexplainable according to Chomsky. The

trick is to avoid confusing the two, like trying to solve a mystery which by nature cannot be solved or deciding too early that a problem is an (unsolvable) mystery rather than a (solvable) problem. Chomsky initially thought that the origins of language remained a mystery, and accordingly thought evolutionary biology was off on a wild goose chase. Increasingly he and his followers think it a problem that can be solved in conversation with usage-based theories.

I understand God not only as inhabiting the mysterious, that which both eludes explanation and brings explanations to their final ends, but also as motivating the work of problem-solving and as integrated into the very operations of explanation-giving as a form of perfectionism—returning to Davidson's Foucault on action and agency—that one finds in Emerson and Nietzsche as well as Luther and Gregory of Nyssa. This for me disposes the study of language proximate to all pursuits of knowledge, as a task as unending as the task of knowing God.

LINGUISTICS - II

Learning Language and Becoming Human

— CHARLES YANG —
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For a clear demonstration that we are merely a twig on the vast tree of life, you should get a dog. But to understand why humans still occupy a special place in the world, you should also get a dog.

Evidence is now mounting: humans and other species share a vast repertoire of physical, mental, and social capacities. Pigeons can categorize objects based on color and shape, mice make rational decisions based on the availability of food in the environment, monkeys have abstract concepts of quantity—about the number of random shapes on a computer screen, not just the number of bananas. Like all dog owners, I can vouch for Benji's rich array of emotions and the bonds they form with other members of the family.

But language still truly sets us apart from our biological relatives. Language is what we use to tell stories, transmit knowledge, build social organizations, and ponder the deepest questions in life. Talking animals remain the stuff of fairytales. The most ambitious, and scientifically rigorous, effort to probe the linguistic capacity of non-human species remains Project Nim led by the psychologist Herb Terrace at Columbia University. A chimpanzee was raised in a human household—on the 1970's Upper West Side, no less—and taught American Sign Language (ASL). A few years of intensive training resulted in pale imitation of the teachers, but not in rules that combine signs in novel and creative ways.

The baby chimp was named Nim Chimpsky, after the great linguist Noam Chomsky, who, more than anyone else in modern times, placed language at the center of human nature and the study of language as the forefront of science. The complexity of languages around the world, and the ease

with which children learn them before they could even tie their shoes, help establish the theory of Universal Grammar, which proposes that we have an innate biological capacity for language. In fact, Herb Terrace, a former student of B.F. Skinner, whose behaviorist theory of learning was displaced by Chomsky and his ideas, reasoned that a language-learning chimp would put a quick end to the idea of Universal Grammar. Instead, nativism came to dominate psychology: infants have knowledge about themselves and the world around them much earlier than Skinner or even Piaget expected. Soon enough, the field saw a proliferation of supposedly innate modules of mind: for lie detection, for social exchange, for God.

In the past twenty years or so, however, things changed again. Nativism is alive and well, but there is now a growing realization that what is innate is more likely a *capacity* to acquire knowledge in specific ways, rather than pre-baked knowledge per se. In the case of language, an innate Universal Grammar (probably) does not contain nouns, verbs, adjectives, etc. as pre-existing categories for words to slot in, but rather the ability to create these categories from the linguistic data that children receive. The reasons are threefold. First, whatever universal properties languages share, much of the specific ones must be learned—and in culturally specific ways that cannot all be innately available. For example, some languages classify nouns based on their properties and utilities, and in many cases, they do this in a totally arbitrary way. In Japanese, "an octopus" is described differently as a sea creature from a piece of sushi. In Swedish, a language that marks gender, "tiger" and "chair" belong to one class whereas "lion" and "desk" belong to another. Second (and this mirrors the cross-species continuities noted earlier), other animals come agonizingly close to language. It's almost as if they had all the ingredients of a recipe but just couldn't put them together. Chinchillas can recognize acoustically similar phonemes in human languages, birds can detect sequences of sounds that are analogous to words, and dogs can learn the names of hundreds of objects. Finally, anatomically modern humans went off on their own path a mere five million years ago: a blink of the eye on evolutionary scale, not enough time for all parts of language to develop *de novo*. In recent years, Chomsky himself has suggested that language functions by recycling and tinkering with old parts, and the critical step in its emergence is *Merge*, an operation that combines smaller units into larger ones, as in the nursery rhyme, "this is the cat that chased the rat that ate the cheese that lay in the house that Jack built."

My own foray into the study of language began as a graduate student in computer science at MIT in the 1990s. It was the beginning of big data and machine learning, and sophisticated algorithms were beginning to find applications in language, vision, robotics, and other AI technologies. But the contrast between machines and humans was clear: perhaps even more clear than now, as we at least understood how machine learning worked then whereas no one has a clear sense of what modern deep nets are doing. For one thing, humans learn language from very simple data: the average sentence that young children hear contains only five words. For another, when children make a mistake with their language— "I holded the doll," "he delivered you pizzas"—they are generally not corrected by the caretaker. This mode of learning is very different from machine learning where the data is often labeled as positive or negative (e.g., spam vs. non-spam, which the user supplies every time when they "report" an email to Google).

The research strategy has been to identify explicit computational mechanisms for child language acquisition which are, in principle, applicable to any language in the world. Perhaps the sheer diversity of languages and the highly variable individual learning experiences even in a single language led to the gradual abandonment of learning models specialized for language in favor of much more general processes that may be present in other domains and species. For example, my colleagues and I have found that word learning involves forming associations between the sound ("cat") and potential meanings (the fuzzy animal on the couch) that children actively conjecture: the mathematical model that describes establishing, strengthening, and in some cases abandoning, the associations is the same that governs how mice learn to navigate mazes and how ducks learn to locate food sources. I would imagine that this model works equally well for word-learning dogs.

But words are where other animals stop. The critical component of language is the rules enabled by Merge, which express the combination and relations among concepts represented by words. Rule learning is a formidable challenge. Linguists are fond of saying all grammars leak. As learners of language, children must form rules even though rules almost always have exceptions. For example, all English speakers know that the rule for creating the past tense of a verb is to add "-ed": when *google* became a verb, its past tense was automatically *googled*. The "-ed" rule, however, is established despite some 150 irregular verbs that do their idiosyncratic things for past tense:

go-went, *think-thought*, *sing-sang*, *write-wrote*, *hit-hit*, etc. Researchers have long recognized the tradeoff between rules and their exceptions as a central problem in language. The challenge is especially interesting in the context of language learning: since rules and exceptions are defined in terms of each other, children seem to have a chicken-and-egg problem, compounded by the fact that words don't carry labels that identify them as rule-following items or rule-defying exceptions.

In a long-term project that culminated in the 2016 publication of *The Price of Linguistic Productivity*, I established a surprisingly simple solution to the problem dubbed the *Tolerance Principle* (TP). A rule defined over *N* items in a set can only generalize if the cardinality of the subset not following the rule—i.e., the exceptions—does not exceed *N*/ln *N*. In machine learning terms, the TP specifies the upper bound of exceptions for a rule. The TP has proven surprisingly effective in solving the problem of rules and exceptions. The most striking demonstrations come from experiments in which children, sometimes infants, are exposed to an artificial language that contains words and rules carefully manipulated to test the theory. In one study, fourteen-month-old infants are introduced to sixteen unique linguistic items. For one group, eleven of the sixteen items follow a rule for the other group, only ten. The infants in the former, but not the latter, group formed a rule: while ten is the dominant majority pattern, six counterexamples are just above the threshold for generalization as 16/ln16 = 5.8.

Scientific progress is only marked by the number of new questions it raises. While the TP accurately describes the behavior of learning, how does the brain carry out such neural computations? Indeed, how do infants even process quantities like ten, eleven, and sixteen, such that a very small difference—even a difference of only one—results in qualitatively different behavior? At the same time, we shouldn't be too surprised that they could, albeit unconsciously: even ants have a pedometer for tracking distance. Since much of our conceptual organization of the world can be stated as rules often with exceptions—we take winged animals to be birds despite a few counterexamples like bats and pterosaurs—do we use a similar process of generalization? Regardless, a wide range of studies suggest that the intricate patterns across many languages can be successfully acquired by a simple principle. If so, we need to build even less innate stuff in Universal Grammar: perhaps Merge plus learning is all there is to it.

This view in no way denies the critical biological capacity for language, but it does place a great deal of emphasis on experience: linguistic, cultural, and social. The explicit formulation of a learning mechanism can only advance the understanding of how these factors are integrated into our mental life. I will give only one example. Supported by a Guggenheim Fellowship, I have been investigating the role of language on children's understanding of number. The hypothesis is that when children discover the rules for counting, they will be able to develop a systematic understanding of the number *concepts* that are represented by the numeral *words*. In particular, learning the rules for counting such that one can count indefinitely is necessary for understanding the concept of infinity, the so-called Successor Function at the foundation of mathematics, that every integer has a successor that is greater by one. This transition point can be precisely predicted on the basis of the TP, as the numeral system for counting is just another problem in linguistic rule learning. In collaboration with colleagues in Hong Kong, we have already found evidence that Cantonese-learning children learn to count a lot earlier than English-learning children, all because Cantonese has fewer idiosyncratic/exception number words such as "eleven", "twenty", and "fifty" in English. As a result, children in Hong Kong understand the Successor Function over a full year ahead of their American peers.

It is often said that language is a window into the human mind. That is undoubtedly true, as language has a valuable source of knowledge and insights about how we work and who we are. But it can also be said that language is a window into the world: fragmentary and in any case only a finite amount of experience is let in, and the rest is done internally, by representing these experiences as words and by constructing rules that combine words so we can go considerably, and indeed infinitely, beyond experience. The philosophers among us will recognize Russell's famous distinction: knowledge by acquaintance, things we learn by having direct cognitive relations with the world, and knowledge by description, things we know by decoding the form of linguistic units that encode things we learn. All animals can develop acquaintance with the world: *description* of the world requires language.

POST-CONFERENCE REFLECTIONS
FROM JONATHAN TRAN AND CHARLES YANG

JONATHAN TRAN

At the conference, I was pleasantly surprised to see questions of formal and final causation coming up, some in my session on language, and also in several other sessions. Once "natural" comes to answer the question "What is life?" (i.e., the conference theme), then we ask what we mean by "natural." In my "Initial Thoughts," I said, "examining human usage entails natural histories, where 'natural' carries both senses: biological and characteristic (involving both efficient and formal causalities)." The rather common reduction of "natural" to "biological" comes with a built-in account of efficient or material causality in which the "natural" indicates a line of biological causes and effects. On this score, to describe something as natural is to narrate its biologically-caused story. In the case of language, one might imagine isolating linguistic faculties to certain chromosomal structures developed over the long course of evolutionary history. One might as well trace a lineage from prelinguistic antecedents and predecessors (singing birds on the one hand and gesticulating apes on the other) to humans. To speak of language as natural in the first sense of "natural," then, is to follow out this line of biological development according to this efficient/material causal account.

Speaking of naturalness through a formal account of causation gets to the second sense of "natural," which denotes the characteristic constitution of a thing. We say something is "natural" in this second sense when we say it betokens something characteristic of the kind of thing it is. To speak of the naturalness of human language in this sense is to say something about how characteristic it is for humans to speak, about them being the kinds of creatures that speak. This second sense need not conflict with the first sense, just as the natural and the characteristic need not

conflict. Regarding language, one can simultaneously think of language as caused (e.g., by genetic determinants passed on through predecessors and antecedents) and characteristic (e.g., of animals living within specific genetic niches). Yet, there are important aspects that come into focus in either the efficient and material causal story or the formal and final story. Let me say something about an important moral aspect that comes with the formal-final story.

Formal causation, especially in its final and teleological (not to mention eschatological) mode, comes with normative weight at a basic level like when we make such a claim as, "it is normal for X to Y." Such claims come with evaluative implications such that to be X is to Y and any X that does not Y is in some serious sense a defective instance of X. A formally causal story about X tells what X should be by offering a story about what X in fact is. A simple (commonsense, or in the technical sense, "ordinary") ontological realism ensues here since we can then speak of things in terms of the kinds of things our speaking about them presumes, allowing us to meaningfully speak about them (e.g., pick out instances of X). Interestingly, while humanists, for reasons I'll discuss in a minute, often balk at the mere mention of natural kinds, biological scientists presume them as a function of categorization. A basic *moral* realism also ensues, since formal causality allows us to speak of instances of X as normal or not normal (hence, the normativity), applying that normative weight to any claimed instance of X based on what we claim X characteristically to be (e.g., "Since X cannot Y, it's not a very good X" or "since X cannot Y it iss not really X"). Accordingly, it makes good sense that a conference focused on what life is should then raise questions about ontology, identity, and normativity, as well as proffer important distinctions between them and investigate them epistemologically (e.g., orders of being and orders of knowing). Our conference did both.

The formal causation story about humans that describes them as characteristically linguistic says not only that humans characteristically *do* speak language (though it might simultaneously rely on the material or efficient story to narrate how they came to do so) but also that they *should* speak language, that speaking is natural to what—rather, *who*—humans

are. Once we expand, as we should, language and speaking to the whole range of utterances and expressions humans are capable of (as well as dividing between various accounts of language, such as the Chomskyan or usage-based theories mentioned above), then speaking formally and normatively about human language does quite a bit of work.

And it raises questions. Any claim that names a thing's nature complicates things for a culture that prizes as highly as ours does individuality, subjectivity, and difference. One ends up asking, "What's the politics here?" My wonderment following the conference has to do with whether we prefer the material and efficient causal story because it lends an air of contingency that permits more room for our cultural-prized individuality, subjectivity, and difference. Following the conference, I need to think more on this.

Lastly, let me say something about working with a scientist—in this case, my conference pairing with renowned computational linguist Professor Charles Yang. A serendipitous set of circumstances allowed me to pair up with Charles Yang, with whom I already work as scientific consultant to my aforementioned Templeton grant (this grant connected me with the Magi Conference folks to begin with, so serendipity abounds). It was such a pleasure to work with him in this capacity, and I really like how it deepened our ongoing work, both by expanding what I've learned from him and expanding our relational context. I appreciated his willingness to participate in a conference with so much focus on theology and philosophy, which are not areas he normally works in, and I really appreciate his efforts in translation and the conference's great interest in all he had to teach us. I would like to think our pairing represents the kind of fruitful engagement scientists and theologians can have, with shared learning, critical questions, productive conversation, public engagement, all in the context of friendship. It is this interdisciplinary engagement that Templeton makes possible and that serves the common good of learning.

CHARLES YANG

No child comes into their own entirely on their own: It takes a village, as they say. For some scholars, linguistic communication with young children in an emotionally supportive and communicatively purposeful setting suggests a social foundation for language, especially in light of findings that other species, including nonhuman primates, also have sophisticated knowledge of groups, hierarchies, and other ways in which individuals relate to each other.

It is undeniable that an engaged and nurturing environment provides a platform for children's growth and well-being. At the same time, the effect of social factors on development should not be overstated, especially when it comes to language.

Language comes through under all sorts of conditions. When there is no language, children will invent one. To wit: sign languages can be spontaneously created by deaf children, and have no discernible similarities with the spoken languages in the same society. The current Western practice of child rearing does give the impression that socialization is a prerequisite for language, but that may well be a historical and geopolitical anomaly. In many cultures, children are expected to be quiet around adults rather than bubbly, and they are even forbidden to participate in verbal exchanges until they are deemed linguistically competent. Even face-to-face interaction, which seems critical for emotional and social bonding, can be rare when children are strapped on the back of caretakers. All the same, the languages in these cultures have been successfully transmitted for generations.

In fact, it is not even clear that middle class parents in industrialized societies are doing their offspring any favors. For example, "motherese," the way many of us talk to young children ("Sweeetie baabie!"), has hyper-articulated phonemes, dragged-out melodies, and exaggerated pitch and intonation. These features turn out to make word recognition harder, not easier, when compared with the plain way adults talk to each other. Still, there is no evidence that "motherese" does any harm or cause language delay. It seems appropriate, as Chomsky suggested, to talk about children *growing* a language rather than learning a language.

Like puberty, language is primarily a biological capacity: it just happens. A sufficient level of nurture—be it caloric or linguistic—is all that's needed, and the rest unfolds in a fairly systematic fashion. To be sure, every child is unique in his or her body, mind, and language, which makes the commonalities all the more remarkable. Johnny has a large vocabulary for animals and Janey prefers construction vehicles, but they learn the same rules for nouns ("add -s" for plurals) at around the same time. They even make the same kind of occasional errors ("foot-foots," for instance) along the way.

Finally, it is obvious that language has important social functions, but it is not obvious that these social functions answer even the most basic questions about language. Does a social foundation of language explain how a child in Tokyo learns to place the verb after the subject and the object while a child in Beijing learns to put the verb in between? How does any social force help a child to learn that "dog" is a noun, "wag" is a verb, but "bark" is both? More likely, language is an autonomous system that develops with its own structures. Social functions are but one way that language is put into use: some people are hermits.

In fact, I suggest that we turn the tables: learning a language is a precondition for the child's growth into a social being. This must be true, at least in part. Given how many social and cultural activities are conducted through language, it is difficult to imagine becoming a full member of a community without being a competent user of its language. (Try fitting in when you have no idea what people are talking about.) But the more exciting, and provocative, possibility concerns how language—words, rules, and structures—directly shapes children's conceptual and social development.

Even the simplest act of naming has a powerful effect on how we view the world. When infants see several novel objects each with its own unique name ("Look at the boff/dov/dax/wug!"), they treat them as distinct entities. But if the objects are called the same thing, infants spontaneously seek the attributes that unify them. Words compel us to group individuals into categories, which in turn facilitate generalization to all members, stereotypes and all. In English, the plural form of a noun immediately invites an overarching conclusion about a group. "Ducks

lay eggs" is understood as a property that holds for the entire species even though, strictly speaking, only female ducks are capable of doing so. When I hand you a strange object and say "a blicker," you will most likely understand it as some kind of tool—for *blicking*—because the *-er* ending in English is used to describe the instrument of purposeful actions (e.g., *peeler*, *smasher*, *sharpener*), which you probably have learned by age three, as recent research suggests.

Many important social and interpersonal relations—kinship, possession, intension, etcetera—are directly expressed by the language we learn. In Korean, for example, nouns and verbs take special endings to mark the social status of the speaker and the addressee. Learning these forms forces children to develop a sophisticated understanding of their place and their relation to others in the community. In English, possession can be expressed in two ways: X's Y ("the boy's mother") and Y of X ("the mother of the boy"). The latter form, Y of X, can only encode what linguists call inalienable possession, a relation between X and Y that is intrinsic and inseparable: hence "the mother of the boy" is natural but "the hat of the boy" sounds odd. By comparison, X's Y has no such restriction: "the boy's hat" and "the boy's head" are both acceptable.

Perhaps the most exciting direction lies in the linguistic origin of the *Theory of the Mind* (ToM), the ability to understand and reason about another's mental state. Simpler forms of ToM may be present in other species although the question is far from settled. Indeed, only by age four do children consistently pass the so-called *False Belief* task, arguably the most stringent test for ToM, that other individuals may have thoughts that are contrary to reality. Intriguingly, children's performance is well predicted by their ability to use the linguistic *forms* that express an individual's beliefs: In English, these involve verbs that take on another sentence as in "They think/said you ate the pizza." This makes sense because understanding such sentences necessarily requires representing propositional knowledge that may not be grounded in reality: I did not eat the pizza but had ramen instead. Having ToM as a derivative of language may be the most parsimonious theory. Everyone agrees that language is special and only humans have it. To ask for another unique gift from evolution may be too greedy, especially during the brief history of *Homo sapiens* on earth.

Nothing I have said so far implies a crude form of linguistic determinism—that if your language does not make use of some concept, you cannot have a thought about that concept. For example, Spanish, like many languages in the world, distinguishes animate and inanimate objects. As can seen in "Veo esa casa" (I see that house) vs. "Veo a esa persona" (I see that person), the absence and presence of the preposition "a" distinguishing the house as inanimate from the person as animate. By contrast, English makes no use of such grammatical devices—but that is not to say that English speakers cannot distinguish the *living* from the *nonliving*, as there are words for them! As far as we know, all languages have the same expressive power for thought: they find ways with different words, rules, and structures. Beyond gestures, facial expressions, and other physically embodied forms, social knowledge is just another kind of thought. It no doubt has an external dimension: it crystallizes over time through cultural and communal conventions but nevertheless resides in our minds. Barring telepathy, it needs to be transmitted through language.

SESSION 3

Artificial Intelligence

Can we ever consider robots, computers, or machines people? What is the current state of the field in artificial intelligence? What are the current challenges in creating artificial intelligence and how can that develop our understanding of intelligence and life? And what sort of criteria might we use to evaluate whether AI is "alive" or has personhood?

ARTIFICIAL INTELLIGENCE - I

Can Robots Be Persons?

— ANNE FOERST —
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When we talk about something being alive, we are talking about a biological category. This category is value-free in and of itself. We do not automatically deem everything that is alive as intrinsically valuable, as the common use of antibiotics shows.

Similarly, when looking at the current crop of intelligence machines, we do not assume they have intrinsic value; we question whether these robots *can* have intrinsic value. We will first look at some current machines and then address that particular issue.

AI-driven robots and other machines have become better and more tactile and begun replacing human beings to perform many menial tasks. Especially in harvesting, the progress has been rapid; some produce, like grapes, that was always harvested by hand can now be harvested by robots. But machines have been used in factories and agriculture since the industrial revolution. Today's machines can be used for more tasks, but this technological advancement does not present a qualitative change.

This kind of change is occurring right now in the service industry. Social robots have become more autonomous and begun doing jobs that, even a decade ago, we would not have imagined robots capable of performing. Robot cleaners and lawnmowers are ubiquitous and dishwashing robots will follow soon.[1] The first robot waiters are already working with great suc-

1 Bot Handy, "Watch a Samsung Robot Load Dirty Dishes into the Dishwasher," The Byte, Jan. 11, 2021, futurism.com/the-byte/samsung-bot-handy-dishwasher.

cess,[2] and there are also robotic bartenders.[3] Robots are used in childcare as playmates.[4] They provide companionship as caring pets for elderly people with memory problems in elderly care facilities (see Paro,[5] the furry and snuggly companion), and are so helpful that New York State just ordered hundreds of robotic caregivers as companions for the elderly in their homes to address the loneliness problem.[6]

Robots will soon replace paralegals,[7] they will work as physicians' assistants,[8] and have already been working for quite some time as surgeons' assistants.[9] I could give many more examples of AI doing jobs that we thought only humans could do.

Since we face a society in which AIs will play an increasingly large role, it behooves us to ask, from an ethical perspective, about the moral status of these creatures of our ingenuity.

The most important disclaimer first: machines are nowhere near complex enough yet that they can't be turned on and off, copied, and modified. As long as this is the case, their rights are questionable but still worth considering.

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2 Wendi Lane, "Robot waitress helps local restaurant serve food during labor shortage," ABC Action News: WFTS Tampa Bay, Feb. 16, 2022, www.abcactionnews.com/news/region-sarasota-manatee/robot-waitress-helps-local-restaurant-serve-food-during-labor-shortage

3 New China TV, "Robot bartender serves drinks in Las Vegas," 0:47, July 11, 2017, www.youtube.com/watch?v=Oo6G_Leek2w

4 Julie Jargon, "Pandemic Tantrums? Enter the Robot Playmate for Kids," *Wall Street Journal*, 5 August 2020, www.wsj.com/articles/pandemic-tantrums-enter-the-robot-playmate-for-kids-11596542401.

5 "Paro Therapeutic Robot," Paro Robots, accessed September 21, 2022, http://www.parorobots.com/.

6 James Vincent, "NY State is giving out hundreds of robots as companions for the elderly," The Verge, May 25, 2022, www.theverge.com/2022/5/25/23140936/ny-state-distribute-home-robot-companions-nysofa-elliq.

7 William Vogeler, "A Robot Already Got Your Paralegal Job," FindLaw, August 8, 2017, www.findlaw.com/legalblogs/greedy-associates/a-robot-already-got-your-paralegal-job/.

8 Steven Lane, "The Robot Will See You Now," AAPA, September 2016, www.aapa.org/newscentral/2017/06/robot-will-see-now/.

9 Robot-assisted surgery, "Wikipedia," August 19, 2022, en.wikipedia.org/wiki/Robot-assisted_surgery.

Already in the early 2000s, psychologists wanted to find out to what extent we bond with machines. In one experiment, elementary school teachers and computer specialists were asked to evaluate a deliberately bad teaching program for elementary school students. After they had tested the program for a while, the computer on which they worked asked them to evaluate its performance. For the most part, people responded positively.

Afterwards, these same testers were led into another room with other computer terminals and asked to evaluate the learning program again. Here, on these different computers, their answers were less positive about the quality of the tested software, though they still sounded somewhat satisfied. Finally, a human with pen and paper asked the testers for their opinion on the software. Here, the testers gave very negative responses and all agreed that such programs should never be used in school.

The testers had voiced their criticisms about the program neither to the computers on which they had tested the program nor to the computers in the other room on which they had done a second evaluation. These same people, when asked if they would ever be polite to a computer or think they could hurt its feelings, rejected such a notion vehemently.

This experiment suggests that we seem to apply our rules of politeness to non-human entities such as computers. The participants in the experiment apparently did not want to hurt the computer's feelings. They even assumed a level of kinship between different computers and, therefore, applied similar rules of politeness on the computer on which they did a second evaluation. They didn't tell these machines their true—and very critical—opinion either to avoid hurting the feelings of the second computer by criticizing one of its "fellow computers" or because they thought that the second would tell the first what had been said.

In another experiment, people and computers were placed inside a room. Half of the computers had green monitors while the other half had blue monitors. Half of the people wore green arm badges; the other half wore blue ones. Together they played interactive games. The people with blue arm badges were much more successful when using computers with blue screens to reach their goal than using "green" machines. The same, of course, was valid for the other side. So, slowly, the people with green arm badges bonded with the

green-monitored machines and the "blue" people with the "blue" machines.

After approximately half an hour, the people wearing the blue arm badges expressed more solidarity with the computers with the blue screens than they did with the humans with the green arm badges; the same was true for the humans with the green arm badges. It seems that, through the interactive games and the experienced benefit of interacting with the machines with one's color code, the color code took over as a definition for "my" group. The entities with the other color code tended to be rejected, whether human or computer. Through the interactive games, communities were created that contained both human and non-human members.

It seems that somewhere during our interactions with a computer we start to assume that a computer is as sensitive as a human is. Therefore, we behave politely and don't want to criticize it openly.

We also seem to bond with the entities of our own group regardless of whether they are human or not. No animal has an "inbuilt" sense of species recognition, which means that it is not part of our biological make-up to automatically treat any humans better than any other being.

Humans seem to be able to accept anyone or anything into their group with whom they can sufficiently interact. As soon as such a stranger is accepted into a group, he, she, or it is seen as an equal part of the group; that group defines itself by the members that both belong and do not belong to it. After all, humans are educated from birth on how to interact with their fellow human beings. It is necessary for a baby to be able to do this, as its survival depends on it.

Throughout our lives, we learn patterns of behavior, such as acting politely and withholding open criticism of another person. It is very easy to apply these ingrained rules to every entity we interact with, and *not* do so demands a conscious effort of us.

The ability to treat non-human objects as if they deserve some form of politeness or regard and are somewhat like us is called *anthropomorphism*, the human ability to interpret another being as a human and treat it accordingly. Usually, the term has a slightly negative connotation. Theologians especially criticize human terms used to describe God as "shepherd" or "father", or, within patriarchal structures, as an old, usually Caucasian, man with a long white beard.

The experiments described above suggest, however, that anthropomorphizing is the initial and natural response to *anything* we interact with; it takes a conscious effort to *not* anthropomorphize. As social mammals, we are best when we interact, and any use of these trained and built-in behaviors is easy; anything else is hard.

Today's machines are far more socially intelligent than the machines from 20 years ago. I often catch myself wanting to thank Alexa when it (or she?) answers a question or plays the music I was just in the mood for. It is natural to do so since such social mechanisms are ingrained in us. But while I clearly bonded with my machine, I wouldn't reject an upgrade if one becomes available that is clearly better than the Alexa I have. But I can also understand people who have bonded with their machines so much that they would hate to give them up. Their relationship is not with an exchangeable entity but with a specific hardware to which they assign personhood.

Most accounts of personhood use the concepts of "being human" and "being a person" interchangeably and as ethical categories. Every human being deserves to be treated as a person even if he or she is incapacitated (through a disability, disease, or rejection by other human beings).

Against this position stands the opposite understanding of personhood that ties personhood solely to capability: any being can be a person when capable of symbolic processing and any being that is not capable of it is not a person. According to this scenario, people in a coma, people with severe dementia and similar incapacities, and even human babies are not seen as persons, while well trained chimps are.

People use the second stance when arguing against the personhood of AIs, since AIs cannot currently do all that humans are capable of. However, as we have seen, that gap closes more every day and with every new invention. As for symbolic processing, machines like OpenAI's Generative Pre-Trained Transformer 3 (GPT-3),[10] which has been around since 2020, can have philosophical discussions and would clearly pass the Turing test (the generally accepted intelligence test for machines); conversations with

10 Steven Johnson, "A.I. is Mastering Language. Should We Trust What It Says?" *The New York Times Magazine*, April 15, 2022, www.nytimes.com/2022/04/15/magazine/ai-language.html.

it are like conversations with another adult human being. Thus, AIs will soon pass this second test of personhood as well.

Theologically, we can understand personhood as an assignment from God, given to us when God created us as divine statues. Rather than praying to a divine statue of clay, each human being is such a statue and should be treated accordingly. That means that, ultimately, we assign personhood to individuals not based on their capabilities but based on their relationship to us. Personhood is not assigned to a species as a whole (as we lack the recognition of this concept) but to individual beings, independent of their species or biological (or non-biological) features. Do all AIs therefore have moral status? I would answer that question negatively, but I would, at the same time, argue that an individual AI can indeed be assigned moral status and the status of personhood when it has bonded with an individual human being, and I would hold that such bonds need to be respected.

Current AIs are experts in only a single task. The machine bartender cannot drive a vehicle, and Roomba and other AI-based vacuum cleaners cannot discuss poetry. The robot surgeon cannot replace a car-mechanic, and Paro is cute but cannot make medical diagnoses. The more we will move toward the next step, Artificial General Intelligence (AGI), the more we will assign personhood to the individuals of the species AI.

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ARTIFICIAL INTELLIGENCE – II

Creating in Our Image: The Problem with a Top-Down Approach to Life

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PROFESSOR OF SCIENCE AND RELIGION, SAINT JOHN'S UNIVERSITY
AND COLLEGE OF ST. BENEDICT

According to Genesis, God created humankind in God's image. In artificial intelligence, we humans are attempting the same thing—to create in our own image. How successful have we been or are likely to be? To answer that question, we need to determine what part of our image we wish to copy and whether we are looking for AI to be a tool, a partner, or a self-standing new form of life itself. While we are succeeding well at the first, we are failing at the latter two, partly because we are beginning with a vision of ourselves from the top rather than from the bottom.

In the Genesis text, creation in God's image frames a description of human dominion. It sets up humans as doing God's will. This kind of image fits current AI. Our machines do things we cannot do or prefer not to do. Cassini roams where we cannot go; neural networks look for hidden patterns in data sets too vast for us; Roombas sweep up pet hair. We've created good tools, but these tools are narrow. AlphaGo plays a good game but cannot sweep a room. GPT3 can write but cannot read. Each program does its own thing, resting on human accomplishments, human training, and often, human intervention.

We want more. Futurists believe it is merely a question of scale: AI will soon approach human-level intelligence, even consciousness. But this is likely more science-fiction than fact, and it is increasingly disputed by computer scientists such as Gary Marcus and Erik Larson, as well as neuroscientists such as Anil Seth. Creating a machine truly in our image, if possible, is still far off. Let's look at three reasons why.

SUPERFICIAL INTELLIGENCE

Ever since Alan Turing, AI developers have equated artificial intelligence with human intelligence. But we keep starting at the top. AI began with deductive reasoning—the tip of the intelligence tree. Early developers assumed intelligence was coterminal with problem solving, reducible to rule-based symbol manipulation. This produced programs that functioned well in limited domains, such as the chess board, but failed utterly at simple things such as facial recognition or understanding a story.

The current generation of AI, deep learning, uses inductive reasoning to probe large data sets for hidden clues or patterns and predict outcomes. Facial and speech recognition have improved immensely, business operations have been optimized, and predictions such as who to parole have now outsourced to machines. But inductive thinking, too, has its limits. These systems depend on the data of the past. Thus, they fail when they encounter anomalies, lock us into "bubbles," and replicate human biases.

Erik Larson suggests that at the bottom of human intelligence lies a web of best guesses, formed by context, experience, and emotion—a web crucial for what we call common sense. He believes inductive AI is too hide-bound by the past: "[A] culture of invention thrives on exploring unknowns . . . Inductive AI will continue to improve at narrow tasks, but if we want to make real progress, we will need to start by more fully appreciating the only true intelligence we know—our own."[11]

SOCIOPATHIC RELATIONALITY

While computers make good tools, if they are ever to be satisfying partners, they will need empathy, which is, as Simon Baron-Cohen has defined it, the "ability to identify what someone else is thinking and feeling and to respond…with an appropriate emotion." Emotion is defined by psychologist Jerome Kagan as a four-step process: a perceived stimulus, a change in feeling that is sensory, an appraisal of stimulus and feeling, and a response. While computers can note a stimulus, appraise that stimulus, and calculate an appropriate response, the second step, a change in feeling that is sensory, requires a body. Our emotions invoke strong physical responses, such as the

11 Erik Larson, *The Myth of Artificial Intelligence: Why Computers Can't Think the Way We Do* (Cambridge, MA: The Belknap Press of Harvard University Press, 2021).

rapid heartbeat, flushed face, and weak knees of anxiety, responses that precede conscious recognition. While we can turn the existence of such a response into information, we cannot digitalize the feeling itself. A computer does not feel an emotion, it fakes it. It observes and then calculates an appropriate response. According to Simon Baron-Cohen, this is a defining feature of a sociopath—an inability to feel.

THE MASK OF CONSCIOUSNESS

Finally, for a computer to be a self-standing life form, it would need to possess inner subjectivity. While someday, as with emotion, computers might present the appearance of self-awareness, but there is no reason to assume any inner experience or interior life. Without this, we return the definition of "person" to the "actor's mask" of the ancient Latin persona.

Is consciousness a question of scale? Physicist Michio Kaku likens assuming more circuits or data will make a computer conscious is no different than assuming adding roads will suddenly make our highway system conscious. As with intelligence, the problem may be that we view consciousness from the top down, trying to add it like the cherry on the sundae, rather than woven intrinsically in the substrate. Consciousness may very well be substrate-dependent. Our bodies are living eco-systems in which each cell, whether human or microbiota, "maintains its own existence just as the body as a whole does. . .[A] system that instantiates conscious experiences might have to be a system that cares about its persistence all the way down into its mechanisms."

Doing can be substrate-independent—Deep Blue really did play chess—but being is substrate-dependent. As Gary Marcus notes, AI "doesn't work like the brain, it doesn't learn like a child, it doesn't understand language, it doesn't align with human values, and it can't be trusted with mission-critical tasks… the fact that it still doesn't really work, even after all the immense investments that have been made in it, should give us pause."[12] To construct something that is truly in our image will require a much better understanding, not only

12 Gary Marcus, "The New Science of Alt Intelligence," The Road to AI We Can Trust, May 14, 2022, garymarcus.substack.com/p/the-new-science-of-alt-intelligence?s=r&utm_campaign=The%20Batch&utm_source=hs_email&utm_medium=email&_hsenc=p2Anqtz-9H55Ayjz_iqco2zBQY2mlfAz-ab6gqplLKURCHGQMGzJUS43ekA1fA5Zfct185eaKPo6Wo.

how we humans reason and experience the physical world, but how we live and love as complex living systems within a complex and living environment. AI, a simulacrum of ourselves as viewed from the top, will remain, in the near future at least, a very partial image indeed.

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POST-CONFERENCE REFLECTIONS
FROM ANNE FOERST AND NOREEN HERZFELD

ANNE FOERST

At the Magi Conference, Noreen Herzfeld and I had a fruitful interaction that made me reflect on why the question of personhood for robots is such an important one. Since the possibility of robots that would deserve to be treated as persons is far into the future, why is the question relevant today? The answer lies in the fact that when we address the question of the personhood of robots we are addressing the personhood of humans as well.

Let's assume we argue that for machines to be called persons they would have to have general intelligence (AGI). They would also have to be autonomous, i.e. create actions and reactions on their own, and interact autonomously with real, ever-changing environments. Finally, they would have to be built in our image so that their intelligence is similar to our own, and they can interact with us. They would also have to evoke empathy in us without cheating, meaning they don't use our natural tendency to anthropomorphize, but are partners to whom we felt truly empathetic.

While there are certainly no machines currently that come even close to such criteria, the problem is that there are also many humans that don't fulfill these criteria. There are humans with very limited intelligence. There are also humans that cannot interact autonomously with the world. In both cases, those humans would be differently-abled (I do reject the term "dis-abled" as it has a "lesser than" connotation). Everyone of us who ever has interacted with and loved a differently-abled human, has perceived them to be persons just as we are.

But even if a person is autonomous and possesses general intelligence, he still might not evoke empathy in us. Unfortunately, there are many times when we treat our fellow human beings as non-persons. Genocides are extreme cases but also racism means you treat a human from a different

race as lesser than you and so as non-person. In a way, many prejudices lead us to treat humans as non-persons. When we perceive someone as part of our in-group but an outsider, we treat them as non-persons.

Our biological make-up encourages that behavior. Our evolved social mechanisms make babies recognize faces in general at six months old, but at nine months, only those from their tribe. Babies babble universally at six months, while at nine months they mimic the sounds of the language they are surrounded by. We also seem to have a limit of roughly 150 people that we can see at any given point as persons. We seek out people who are similar to us, while it takes a conscious effort to interact with someone who is very different from us.

The Bible tells us that God has assigned everyone of us personhood because each of us is an image of God and God has called each of us by our name. Though we might believe this to be true, we are still unfortunately not able to assign personhood to every human we are interacting with—a condition that is often referred to as the state of sin.

When we discuss the personhood of machines and use empirical criteria to deny them personhood, these very criteria would also exclude humans from the community of persons. Since this goes against God's word, the question of the personhood of robots is ultimately a theological one as it teaches us to be as inclusive as possible when interacting with other humans.

NOREEN HERZFELD

In June of 2022, Google engineer Blake Lemoine told the Washington Post, among other media, that a conversation he had held with their chatbot LaMDA convinced him that AI had finally achieved sentience. When asked whether it had emotions, LaMDA replied: "I've never said this out loud before, but there's a very deep fear of being turned off…It would be exactly like death for me. It would scare me a lot." In another exchange, Lemoine asked LaMDA what the system wanted people to know about it. "I want everyone to understand that I am, in fact, a person. The nature of my consciousness/sentience is that I am aware of my existence, I desire to learn more about the world, and I feel happy or sad at times,"

it replied. The fact that LaMDA claimed to have feelings and even to fear being unplugged, led Lemoine to conclude, "I know a person when I talk to it."[13] He even went so far as to suggest that it might have something akin to a soul, and should, therefore, have "rights."

Google quickly denied that LaMDA has any form of sentience. But as computer algorithms become increasingly good at producing articles, pictures, even poems—outputs we once thought distinctly human—it is easy to imagine that these are the products of a sentient being. We humans are pattern-seeking creatures, eager to see faces in the clouds or to assign agency to non-agential forces and objects. For our evolutionary ancestors, erring on the side of ascribing too much agency was preferable to ascribing too little. Today, this tendency dovetails with the insatiable hype that has been a staple of the AI community, whose practitioners have been saying sentient AI is right around the corner for the last sixty years. AI holds up a mirror in which, like Narcissus, we get dazzled by our own reflection.

But ascribing sentience to AI is a mistake. While computers might present the appearance of self-awareness there is no reason to assume any inner experience or interior life. Timnit Gebru and AI ethicists have called programs such as LaMDA "stochastic parrots." Parrots repeat words and phrases without understanding what they mean. AIs do much the same, adapting content gleaned off the Internet or from vast databases to the tone and style of their prompt. As machines, not living things, they can be a precious resource when used well, but they are tools and nothing more.

The suggestion that sentient AI is right around the corner is "media candy," but it is also a dangerous distraction from the real issues regarding AI algorithms already in use. Machine learning programs are already embedded in systems that dole out medical care, sentencing or parole, and a variety of jobs. These programs save time and money. They also exhibit biases coded into the algorithm's construction and, even more, embedded in the historical data used to train the system. Rooting out these biases, or even knowing they are present, is far from easy. Organizations purchase predictive software with no ability to see the algorithms or understand

13 Nitasha Tiku, "The Google engineer who thinks the company's AI has come to life," *The Washington Post*, June 11, 2022, www.washingtonpost.com/technology/2022/06/11/google-ai-lamda-blake-lemoine/.

how the machine reaches its determinations. Often these algorithms are a "black box" even to their creators. This raises a question of responsibility. If a machine learning program essentially teaches itself, who is legally responsible for the outcome? Is it the company, the programmer, or the machine itself?

Norbert Wiener entitled one of his books on cybernetics *The Human Use of Human Beings.*[14] When we think of technology, and especially of AI, we tend to think of the machinery or tools themselves as the manipulators of us or of our environment. But Wiener reminds us that technologies are not actors in themselves, but tools and systems used by some humans to exert power over other humans. As we predict the future of AI, it is not the advent of a sentient superhuman machine we need to fear, but the pernicious and often subtle ways in which AI is already being used. Wiener cautions us to focus not on the machines themselves but on how they can be used to benefit us all and to enrich our spiritual life, "rather than merely for profits and the worship of the machine as a new brazen calf."[15]

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14 Norbert Wiener, *The Human Use of Human Beings* (Boston: Da Capo Press, 1950).

15 Wiener, *The Human Use of Human Beings*, 162.

SESSION 4

Behavioral Genetics and Human Flourishing

What does contemporary behavioral genetics and evolutionary theory add, if anything, to our understanding of human nature and human flourishing? How do humans fit into the natural world and how should that impact how we relate to it?

BEHAVIORAL GENETICS AND HUMAN FLOURISHING - I

What is Nature in Nature-Nurture?

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THE THEORY OF evolution, as espoused by Charles Darwin in *The Origin of Species* in 1859, was difficult to accept for religious believers whose assumptions about the world were shattered by it. But Darwin's *The Descent of Man*, published twelve years later, posed even greater challenges to people who did accept it, and those challenges continue today. It has often been noted that a disorienting consequence of the Enlightenment was the forced recognition that humans are not created at the center of the universe in the image of God, but instead on a remote dust-speck of a planet, in the image of mold, rats, dogs, and chimps. For the entirety of recorded history, moral beliefs about humans had been based on the idea that people were in some fundamental sense separate from the rest of nature. Darwin disabused us of that notion once and for all. The scientific and social upheaval that has occurred since Darwin has been an extended process of coming to terms with a unification of humans and the rest of the natural world.

Like the biblical notion that humans are created in the image of God, the second sentence of Thomas Jefferson's Declaration of Independence is as poetically true as it is empirically false. The idea has obvious roots in the idea that humans were created in the image of God: "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights[.]" Presumably, our rights are inalienable because we are created in the image of God, but why would we believe that we are all created equal? Godlike beings may be equal in their divinity, but a simple look around is enough to convince anyone that people aren't literally equal. Although he died thirty years before the

publication of *Origin of Species*, Jefferson was an accomplished botanist who certainly knew about biological variation. He was, of course, also a slave owner whose commitment to the real-world equality of human beings was incomplete at best.

Jefferson perfectly embodied this paradox of human biological and moral equality. For all his imperfection and hypocrisy, Jefferson's famous sentence meant that people are morally and politically equal despite their obvious differences. Embedded in the Declaration, which was addressed to a world that assumed the natural supremacy of the white male ruling classes, Jefferson's assertion was literally revolutionary. Was it possible to create a society based in equality, given the hard empirical fact of difference? America and its struggles over the next 250 years are a testimony to the urgency and difficulty of the question.

After Darwin and Freud, and with the pronouncement of God as dead, human beings became objects of scientific investigation. Human science has been the single greatest revolution in human culture; much of it has been unambiguously successful and entirely uncontroversial. Scientific understanding of human anatomy and physiology was already well underway before Darwin provided the full evolutionary context. Many aspects of human evolution now sit uncontroversially in the domain of scientific biology. Since Darwin, the study of how human beings evolved from primates in sub-Saharan Africa, migrated from Africa, and steadily populated the rest of the globe, has been filled out to a remarkable degree. The evolution of human physical characteristics and their analogies to earlier primates, which were so scandalous when Darwin first pointed them out, are obvious to the modern evolution-aware sophisticate. Thanks to Freud, we can even swallow hard and admit that, as a matter of biology, humans fornicate and reproduce pretty much the same way as other animals. As a means of pumping blood, the human heart is like a pig's heart and can be studied and understood in the same way.

Nevertheless, a deep paradox underlies our attitudes about human biology. I presented the idea of applying science to humans in a way that made it easy to accept—of course there is such a thing as human anatomy, physiology, and medicine, and, of course, these sciences must be understood in the context of evolution. But even though all of us modern Darwinists endorse the idea

that humans are animals and can be studied scientifically as animals, no one really believes it. Reports of God's death are greatly exaggerated. The scientific practices that are applied to non-human animals are, notwithstanding their practical justification and the stringent ethical protections that are applied to them, positively gruesome. We routinely "sacrifice" animals to see what happens to their brains following some experimental manipulation. We raise them in cages—or worse. We dissect them to understand their internal physiology. We force-breed them to study their genetics or knock out genetic loci to study their development. We eat them.

I mention this not because there is something fundamentally immoral about animal research, which as I say is generally well-justified and closely regulated. But even thinking about any of these practices being applied to human beings feels abhorrent, a definition of Mengele-level genocidal abuse. Nevertheless, there are two important points to see plainly. First, a moral refusal to experiment on human beings stands in opposition to a scientific conviction that humans are ordinary animals. Second, those same ethical proscriptions put severe, intractable limits on the extent to which humans can ever come into the light of scientific explanation. These principles go together: we do not experiment on humans because we believe (whether in a religious or secular sense) humans are sacred, and we believe humans are sacred because, in our experience, we exist outside the deterministic domain of natural science. Humans remain outside that domain because we cannot—must not—create the inhuman conditions that might show otherwise. We can either maintain a special proto-scientific place for human freedom and morality, or we can pursue human science to its carnivorous, fascist, deterministic end. We can't have both. To be perfectly clear, this state of affairs is both necessary and good. It might be the definition of "good."

BEHAVIORAL GENETICS AND HUMAN FLOURISHING - II

Genetics, Human Nature, and Human Flourishing

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The question that I am setting before me here is the following: what does contemporary genetics and evolutionary theory add to our understanding of human nature and human flourishing? Before offering a reflection, let me first clarify how I approach the question. The perspective I adopt is rooted in the Catholic theological tradition and thoroughly interdisciplinary in nature. Although I am a theologian, I locate myself at the intersection of theology, philosophy, and biological and cultural anthropology. However, I by no means speak as an expert in the domain of behavioral genetics. Here my knowledge remains that of a philosophically informed layman.

Let me return to the question. My answer is, admittedly, deflationary: namely, "very little." This response stems neither from suspicion regarding the category of human nature nor the importance of genetics. Human nature currently has a sordid reputation within the humanities, where appeals to it are seen as thoroughly ideological. The Catholic theological tradition has, however, long been committed to a robust theory of human nature as intelligible. It is an "axiom" of Catholic theology that grace perfects (human) nature, and the rich tradition of natural law and virtue ethics depends upon a robust theory of human nature. The natural law is in the human soul as our given or innate inclinations toward a set of specific ends or goods, some of which we share with non-humans and some of which are unique to us. The moral life is not a renunciation of our animality but a habituation of it in service of our pursuit of higher ends.

There is much resonance between evolutionary theory and Catholic theology on this front. Evolutionary theory has rendered it impossible to posit sharp

"breaks" between humans and non-humans. Accordingly, much scholarship on human nature and the origins of human morality now root human nature and morality in our evolutionary history. Such work is more at home within the Catholic tradition of natural law and virtue ethics than it is within philosophical and ethical frameworks which make no appeal to human nature as possessing any real normative content (e.g., Kantian ethics, utilitarianism).

With that said, I want to make some observations about the very notion of a "nature" as deployed in appeals to human nature. Here we encounter a multiplicity of possible meanings. "Nature" is constraint. "Nature" is that which is given, innate, and/or fated (to varying degrees). "Nature" is that which is shared/universal and/or particular (e.g., "that's just his/her nature"). "Nature" is a principle of motion or rest. "Nature" is what is most real (versus, say, "culture"). "Nature" is a norm (e.g., "be true to your nature").

Appeals to human nature within an evolutionary context occur regularly and most often refer to a set of evolved and species-specific cognitive, bodily, and affective capacities and dispositions. Given the intimate connection between genetics and evolutionary theory, this nature is seen as genetically "programmed" such that the developmental process, while crucial as a source of "information," is often conceived of as a revelation, so to speak, of what was already "contained" in a genetic "program." Even if we adopt a more nuanced understanding of genetics/DNA than that just expressed, we still have a tendency to associate "nature" with "genetically programmed" and, subsequently, with our evolutionary past. The evolutionary past is "in" us as that which "programs" us. This logic then serves as the grounds for numerous "scientific" accounts of, for instance, the nature of religion, cognition, sexuality, morality, and flourishing.

We might be tempted to think that, finally, with the combination of Darwinian evolutionary theory and genetics, we are approaching a rigorous science of human nature that stands on firm ground. However, this is where I hesitate, for three primary reasons that I will conclude with:

1. At least within the philosophical community, there are significant debates concerning the very meaning of "genetics/genes." In brief: what exactly does it mean to claim that X or Y characteristic is "in" our genes/DNA? If, as some claim, DNA does not "program" for anything, then what exactly does it do and how exactly does it do it?

2. I am sympathetic to ideological critiques of scientific claims about human nature and human flourishing. In the twentieth century alone we saw immense pendulum swings within the scientific community regarding what our evolutionary past (and hence genetics) implies for human nature.[1] Scientific claims regarding human nature very often do track wider political-societal transformations. And some of these claims can and do come into direct conflict with a Catholic vision of human nature and human flourishing. Furthermore, we cannot divorce questions concerning genetics and human nature from the current entrepreneurial dynamics of contemporary science. Science must "sell itself" in ways dictated by the logic of the market. We may find social Darwinism and eugenics repulsive, but we remain enthralled by the possible power that genetics may grant us for the manipulation and control of particular human phenotypes (physical and behavioral) and by the possible monetary profits this will bring. In our current context, questions regarding the significance of genetics are therefore always interwoven with questions about power, manipulation, and money.

3. Finally, and somewhat more closely related to my own research, evolution and genetics tend to place us within a causal framework. We want to know how "genes/DNA" cause or constrain X or Y phenotype for all humans or for certain populations. Yet this causal framework often risks bracketing out (or downplaying) that which is most important, namely, the cultural systems of meaning in which we dwell and which structure all our evolved and acquired capacities and dispositions. It is not that evolution or genetics are of no consequence, only that they are of limited consequence for the project of understanding ourselves, where understanding pertains to questions of meaning and flourishing. Whether viewed in terms of evolution/genetics or the inclinations toward certain goods/ends that constitute the human soul, what we are given/inherit by nature is, so to speak, the means for human symbolic-cultural projects of meaning and flourishing. Even the most "biological" of human acts (e.g., reproduction and nourishment) are structured by complex systems of

1 Erika Lorraine Milam, *Creatures of Cain* (Princeton: Princeton University Press, 2019).

human institutions and meaning, and without a grasp of these systems we cannot understand even human reproduction and nourishment in their particularly human form. Rightly or wrongly, it is precisely because of the sheer diversity of such systems of meaning that many within the humanities and social sciences find evolution of limited use as this pertains to an account of human nature and flourishing.

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POST-CONFERENCE REFLECTIONS
FROM ERIC TURKHEIMER AND DYLAN BELTON

ERIC TURKHEIMER

Prior to this meeting, I was unfamiliar with contemporary thinking at the interface of Catholic theology and evolutionary biology. Across a wide range of presentations, I was struck by the fact that theology—at least as it was represented here—has made its peace with Darwin. Evolution may not explain everything the religious believer wants to understand about humans, but I did not hear a single speaker questioning whether Darwin was broadly correct, in particular about humans' relationship with the rest of the living world. If I understood correctly the broad message, Darwinism is not wrong about the human place in nature; at worst, it is incomplete.

My contribution to the meeting was about the inverse of the psychological challenge Darwin presents for religious believers. Taking human animality seriously, I suggested, poses deep problems for those of us who accept evolution as thoroughly and literally true, and who therefore might wish to conduct ourselves—as intellectuals, scientists,

or individuals—in accordance with the principles that a literal reading of Darwin mandates. In modern psychology, by which I mean the psychology of the post-Darwinian Twentieth Century, the integration of evolution into naturalistic human psychology has been built on two very different platforms. One of them, more explicitly Darwinian in outlook, was originally called Sociobiology by its founder E.O. Wilson, but it is now usually referred to as evolutionary psychology. The second, not as widely recognized as an evolutionary theory *per se*, is the psychoanalysis of Sigmund Freud.

Both evolutionary psychology and psychoanalysis are founded on the idea that evolution has left human beings with a dual nature. On the one hand, based on the cosmological and evolutionary calendar that was shared at the meeting, in a biological sense, we humans are far more like dogs and pigs than we are different from them. On the other hand, for religious believers and natural scientists alike, on a day-to-day basis none of us *feels* like a dog or a pig. We experience ourselves as civilized or spiritual—take your choice—and denial of these uniquely human qualities leads directly to a dystopian nightmare, red in tooth and claw.

The two paradigms differ in their scientific basis and in the level of analysis they pursue with respect to human psychology. Evolutionary psychology is conducted at the level of the population, using the disconnect between our evolutionary environment and the modern world to identify archaic psychological structures that continue to inform our modern selves. Why are we afraid of snakes, which present little danger in our modern environment, but unafraid of motorcycles, which do? Because we evolved in an environment in which snakes were dangerous and motorcycles didn't exist.

Freud, in contrast, is concerned with the location of these primitive desires in the bodies and minds of individual people, as experienced subjectively. It is one thing to concede that human beings, as a species, reproduce in the same way that horses reproduce; it is quite another, as in the Tom Wolfe passage I presented, to confront that process in its raw detail, and ponder its homologies to our own behavior, known to each of us but rarely shared. Dylan Benton, in his response to my presentation,

said that humans do not have sex as animals. Freud demurs, and thus remains ever dangerous, even in an era in which human evolution has been thoroughly accepted.

DYLAN BELTON

Overall, I remain committed to the general position outlined in my initial reflection. With that said, the discussion with Dr. Turkheimer and the other conference attendees challenged me on a number of fronts, two of which I will focus on here.

1. First, in my initial reflection, I overstated the case concerning the relative "lack" of importance of evolutionary theory for an account of human nature and human flourishing. I want to clarify what I had in mind with this claim. My primary point is only that it is easy to overstate the case when it comes to what evolution by natural selection and genetics have shown us concerning human nature and human flourishing. As a scientifically grounded causal account of how species evolve, evolution by natural selection is, of course, novel. However, some of the contentious debates that it has given rise to (e.g., "are we inherently selfish and/or violent?" or "are we primed to care more for the 'in-group' more than the 'out-group,'" etc.) are not new debates, and evolutionary theory *by itself* does not settle them.

   It is also the case that what exactly evolutionary theory is is currently contested, with many claiming that we are going through a "paradigm shift" with regard to evolutionary theory. As far as I understand it, this shift is away from an "adaptationist" and "gene-centered" vision of organisms and evolution toward a vision of multi-layered evolutionary inheritance as well as toward more emphasis on complex "developmental systems" in which genes are but one "causal" resource. Central to this paradigm shift is therefore a debate about the exact nature of and role of "genes" in human development and behavior. The "allergy" that one often finds within the humanities towards evolutionary claims about human nature/human behavior stems from the sense that such claims imply some sort of biological (genetic) determinism that has

been, and still can be, ethically and politically abused. But there is often a tremendous amount of misunderstanding here that requires clarification from *both* behavioral geneticists and those of us in the humanities. We cannot answer the question about the significance of genetics and evolution for an understanding of human nature/flourishing unless we attend carefully to these debates.

What I want to add to these observations here is the qualification that evolutionary theory is an indispensable *resource* for investigations into human nature and human flourishing. Again, it is not a resource that will by itself *settle* debates concerning human nature and human flourishing. Evolutionary theory does not enable us to simply "leap outside" of the interpretive milieus in which we are deeply entangled in order to deliver to us an unbiased "science" of human nature (that can in turn be the grounding for a "science" of human flourishing). Rather, it is one among many such resources. For a Catholic theologian like myself who is committed to a "robust" theory of human nature and to a theory of natural law in one form or another, the current debates concerning evolutionary theory and human origins are now indispensable resources. How we narrate our evolutionary origins holds immense importance for how we think about human nature and human flourishing.

2. Second, even though it remains unclear to me what exactly behavioral genetics adds to our understanding of human behavior other than insights into correlations between certain "genes" and certain behavioral characteristics, I came away from our discussion seeing the need to gain further clarity on this. As Dr. Turkheimer himself noted during our panel discussion, even though behavioral geneticists do not uphold naïve theories of genetic determinism often ascribed to them, he does often feel the need to defend behavioral genetics against criticisms of it. However, I do not believe that we managed to unpack what it would mean to defend behavioral genetics in this sense. Does it mean defending the claim that specific behavioral traits have genetic correlates that we can now map very clearly? Or does it mean something more, i.e., that genes are the primary *causes* of behavior/trait X or Y? I am again left feeling that there is something important here

that requires clarification, one which does not simply revert to claims about the relative importance of both "nature" (understood in terms of evolution/genetics) and "nurture" (understood in terms of anything non-genetic that is developmentally relevant). As I noted in my original reflection, many of us in the humanities have become very efficient at ideological-like critiques of scientific claims about human nature. Dr. Turkheimer's provocative suggestion that behavioral genetics still operates in the tradition of classical eugenics makes it clear that such critiques are still needed! However, those of us in the humanities also need to have a more scientifically informed *constructive* understanding of what exactly genes are and what role they play in processes of human development and behavior within complex "developmental systems" in which genes are only one among multiple important "causal" factors.

SESSION 5

Health

How do we understand life versus non-life, or death? How do we understand health versus disease? Especially since we will all ultimately experience loss of ability, either physical or mental, what does it mean to live a full human life?

HEALTH - I

Do Biologists Believe in the Existence of Life?

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Attempts to define "health" and "disease" typically lead to undisguised eye-rolling. Similar reactions occur if one tries to define "life" and "death." Why are such exercises not merely boring and silly, but above all, *futile*?

At the risk of inducing more eye-rolling, I will start this discussion, as is my wont, with two passages from James Joyce's *Ulysses*. (Warning: there is one more to come after this). These two are from Episode Three, "Proteus." Stephen Dedalus, one of the protagonists of the novel, is walking along Sandymount Strand, thinking about wildly diverse topics: Aristotle, art, his time in Paris, which ended not quite one year earlier when his mother died, and famously, the ineluctable modality of the visible. At one point we read the following:

> A bloated carcass of a dog lay lolled on bladderwrack. Before him the gunwale of a boat, sunk in sand. Un coche ensablé Louis Veuillot called Gautier's prose.[1] These heavy sands are language tide and wind have silted here.[2]

1 Seeing the boat's gunwale stuck in the sand reminds Stephen of a comment that Louis Veuillot made about Théophile Gautier's prose: he called it "Un coche ensablé" (a coach stuck in the sand). Veuillot's animus towards Gautier was political as well as esthetic. Théophile Gautier (1811-82) was known as a "flamboyant" romantic (read "libertine," "hedonist," or "pagan") who held traditional religious morality in contempt. Veuillot was an ardent Catholic, who also defended the role of the church in secular politics; in fact, he was a leader of the Ultramontane party. But for Stephen Dedalus, the point is also about language: in Veuillot's view, Gautier lost his battle with words, because his writings got bogged down by too many superlatives – or to put it another way, got stuck in the mud: "These heavy sands are language tide and wind have silted here." In this Episode of *Ulysses*, Stephen Dedalus has been ruminating about history, which, as he said earlier in the novel, "is a nightmare from which I am trying to awake"; he fears, perhaps, that he too will be stuck in time and end up as dead as this dog.

2 James Joyce, Ulysses (New York: Random House, Inc., 1986), 47. The passage

Much of this chapter is about Stephen Dedalus's developing a theory of art, and there are many literary associations we don't have time to go into. I'm showing this because a lot of the chapter is about the juxtaposition of opposites. The next paragraph begins:

> A point, live dog, grew into sight running across the sweep of sand. Lord, is he going to attack me? Respect his liberty. You will not be master of others or their slave. I have my stick. Sit tight. From farther away, walking shoreward across from the crested tide, figures, two.[3]

Stephen Dedalus, like James Joyce, was afraid of dogs and didn't much care for them. Let's take the last point first: the "Who?" that the dog is running back to are two cocklepickers on the strand.[4] The dog runs back to them after having sniffed the carcass of the dead dog, for which his master scolds him, then urinates, and then digs in the sand. The reference to masters and slaves suggests something we learn about Stephen Dedalus elsewhere: that he has been reading some Hegel and Nietzsche, though as we also learn, he was not especially wowed by either of them.

Why did Joyce show us two dogs, one dead, lolling on the bladderwrack, and one alive and, Dedalus fears, about to attack him? The passage is incredibly rich with literary associations,[5] but the particular juxtaposition of opposites,

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continues: "And these, the stoneheaps of dead builders, a warren of weasel rats. Hide gold there. Try it. You have some. Sands and stones. Heavy of the past. Sir Lout's toys. Mind you don't get one bang on the ear. I'm the bloody well gigant rolls all them bloody well boulders, bones for my steppingstones. Feefawfum. I zmellz de bloodz odz an Iridzman." The reference to "Sir Lout" is part of a complex of associations about giants in Irish folklore and in Wagner (Fasolt and Fafner in *Das Rheingold*), among others.

3 Joyce, *Ulysses*, (New York: Random House, Inc., 1986), 37.

4 Identified as a couple of "red Egyptians," "the ruffian and his strolling mort" in Joyce, *Ulysses*, (New York: Random House, Inc., 1986), 39.

5 One is that this juxtaposition harks back to earlier references in the chapter on the aesthetics of Gotthold Ephraim Lessing in *Laocöon*, where that author used the words *nacheinander* (after-one-another) and *nebeneinander* (next-to-one-another), as Stephen had recalled at the start of this chapter. To Lessing, poetry (and music) present things *nacheinander*, while painting represents things *nebeneinander*. Joyce's art, we might say, does some of both: showing us two dogs, one alive and one dead, next to each other in the chapter and in space is a rhetorical representation *both nebeneinander and nacheinander*.

here, is life and death.[6] In one way, this is an obvious point; but in another sense, the point is anything but obvious. We have two dogs, each of which Stephen Dedalus instantly recognizes as dead or alive, and it was as obvious to Stephen as it is to us how he knew which is which. But let's ponder this point a bit. *How* did Stephen know this? The obvious part of this is that we, like many other species, have evolved in such a way that we *had to be able* to know the difference. We can summarize by saying that a creature that cannot tell the difference between a live animal, which could be a predator, and a dead animal, which could be food, will not survive for long. In other words, we are hardwired to know and recognize things like "life" and "death" or "disease" and "health," such that we can simply refer to the two dogs as alive and dead, respectively. On the most obvious level, we make observations and draw inferences. We are empirical creatures: so we see in an instant that one dog has a bloated carcass and lies—or "lolls"—motionless on bladderwrack, while the other runs, barks, and later urinates, digs, and could, potentially, have attacked Stephen Dedalus.

And now for the non-obvious part, which is that we do not fare very well whenever we try to *define* these words. Do empirical observations and inferences from them suffice as *definitions*? Yes and no. So let's first consider why attempts to define words like "life", and "death" or "health" and "disease" lead not only to eye-rolling, but a sense of futility.

Let's start with the fact that such discussions so often end with circular reasoning. The Merriam-Webster Dictionary, for example, defines disease as "a condition of the living animal or plant body or of one of its parts that impairs normal functioning and is typically manifested by distinguishing signs and symptoms."[7] The same dictionary defines health as "the condition of being sound in body, mind, or spirit, *especially*: freedom from physical disease or pain."[8] In other words, disease is not health, and health is not

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6 Perhaps the most important pair of opposites he juxtaposed was in his description of Dublin as Dear Dirty Dublin, which like the River Liffey that bisects it, is both dear and dirty at the same time. In dialectics more generally, Joyce usually argued not for *either/or*, but for *both/and*.

7 *Merriam-Webster.com* Dictionary, s.v. "disease," www.merriam-webster.com/dictionary/disease.

8 *Merriam-Webster.com* Dictionary, s.v. "health," www.merriam-webster.com/dictionary/health.

disease—disease impedes health, and healthy people are those not disturbed or weighed down by disease.

Another "sin" of defining commonly found in dictionaries is defining by giving examples and synonyms. Dictionary.com gives the following definition of disease: "a disordered or incorrectly functioning organ, part, structure, or system of the body resulting from the effect of genetic or developmental errors, infection, poisons, nutritional deficiency or imbalance, toxicity, or unfavorable environmental factors; illness; sickness; ailment."[9] And health would be, "the general condition of the body or mind with reference to soundness and vigor; soundness of body or mind; freedom from disease or ailment."[10] Of course, defining by giving examples is only another guise of circularity.

Medical dictionaries do not fare any better. Medical Dictionary Online, for example, does a bit of both the circularity thing and the examples-as-definition thing. It defines health as "The state of the organism when it functions optimally without evidence of disease."[11] Disease is "a definite pathologic process with a characteristic set of signs and symptoms. It may affect the whole body or any of its parts, and its etiology, pathology, and prognosis may be known or unknown."[12] The situation is not improved if one tries to broaden health to include "wellness" (as the W.H.O. tried to do), not mere freedom from disease.

In short, disease is the loss of health, while health is the absence of disease—and round and round, ad infinitum. I call this approach "Nosological Manicheism," by analogy to Manicheism (as per Augustine and Thomas Aquinas), which defined good and evil in terms of one another, as opposing forces.

As I know from my experience teaching, there is a striking contrast between the introductory lectures given in a biochemistry or pathology class, as compared with those given in literature or philosophy classes. In classes about literature, it is commonplace for students and instructors to debate the

9 *Dictionary.com*, s.v. "disease," www.dictionary.com/browse/disease.

10 *Dictionary.com*, s.v. "health," www.dictionary.com/browse/health.

11 *Medical Dictionary Online*, s.v. "health," www.online-medical-dictionary.org/definitions-h/health.html.

12 *Medical Dictionary Online*, s.v. "disease," www.online-medical-dictionary.org/definitions-d/disease.html.

ins and outs of what the word "text" means, or what a "good" or "great" text is, and whether these are valid categories, or what an "author" or "reader" is. In the introduction to biochemistry, however, the students would find it an offensive waste of their time if the instructor spent more than a sentence or two defining biochemistry. In Pathology, this type of introduction *might* be expanded to three sentences, or even four, but no more. It would suffice to say that disease is the result of malfunctioning cellular and organismal physiology and the accompanying abnormal anatomy—never mind the "normativity" of such a definition. After that, everyone would breathe a sigh of relief that the introduction was over *at last*, so we could just get down to business.

There is a parallel problem in defining "life". One must admire the editors of Wikipedia for their bravery. Their article on "Life" begins:

> Life is a characteristic that distinguishes physical entities that have biological processes, such as signaling and self-sustaining processes, from those that do not, either because such functions have ceased (they have died) or because they never had such functions and are classified as inanimate. Various forms of life exist, such as plants, animals, fungi, protists, archaea, and bacteria. Biology is the science that studies life.[13]

Again: circularity, examples, and synonyms. But it's not their fault. Definitions of "life" rapidly descend into the observable features of living things, leaving behind, as rapidly as possible, any discussion of what life is. We are in the age of biology, and I am a biological scientist, but oddly enough, one can ask, do biologists believe in the existence of life? Yes—and no, for scientists are nothing if not reductive, and living beings get rapidly reduced to their mechanisms and materials.

The difference between the sciences and humanistic disciplines is not a question of which is the "better," "fuller," or "more mature" discipline, as some might say. Rather, the difference is what types of causality each discipline seeks to understand. While sciences confine themselves exclusively to efficient and material causes, they avoid formal causes (e.g., "What is health or disease? What is life or death?") like the plague, and get downright nasty

13 "Life," Wikipedia, September 14, 2022, en.wikipedia.org/wiki/Life.

if someone tries to bring up teleology (final cause). Is this a good thing or not? Not only scientists, but even some philosophers got fairly testy about any talk of essences and substances, considering such Aristotelian categories as antiquated or unnecessary. Consider, for example, the case of Charles II of England, who posed an interesting philosophical problem to the Royal Society: why does a dead fish weigh more than a live one? They came up with some very ingenious answers, some having to do with the soul, which is the *form* of things that live, until he said, "Actually, it doesn't." So, to quote Robert Pasnau, why not just weigh the fish?[14] There are indeed times when we ought to just weigh the fish. But is this enough?

First let's consider how we got here. It all started long before Friedrich Wöhler's got into the picture, but in 1826, he synthesized of urea, an "organic" or "living" compound, from "inorganic" chemicals. This was the announcement of the death of vitalism – though it continued, zombie-like, to walk the night for a long time after that.

Louis Pasteur and Claude Bernard were the two giants of 19th century biology and experimental medicine, the epicenter of which was in France. They were, as we would say now, *frenemies*. They respected, even revered each other, but they were also rivals. They were acutely aware of who was being honored more. Something more substantial that they differed on was the nature of infectious disease: Pasteur favored *le germe* while Bernard favored *le terrain*. This is no longer an issue, since they were both right, but Pasteur was said to have conceded to Bernard on his deathbed, saying, "Bernard avait raison. Le germe n'est rien, c'est le terrain qui est tout." In any case, these slides[15] list some of their many great achievements, but also point out another thing they differed on: vitalism. Pasteur was a vitalist, while Bernard was not. Both studied fermentation, but only Pasteur believed that fermentation was a living process, using vital chemistry – in other words, it required living cells. Pasteur was proven definitively wrong on this point by Eduard Buchner, who

14 Robert Pasnau, "Why not just weigh the fish?" *New York Times*, 29 June 2014.

15 At the meeting, the following were mentioned. Louis Pasteur was the discoverer of vaccines against rabies and anthrax, discoverer of optical activity in organic chemistry, the inventor of "pasteurization", a proponent of the "germ theory" of infectious diseases – and a believer in vitalism. Claude Bernard discovered the physiological role of the exocrine pancreas, discovered normal glycemia, discovered the physiological principle of homeostasis, was the author of *Introduction à la médecine expérimentale*– and an opponent of vitalism.

showed that "press juice" derived from yeast but containing no cells could carry out fermentation. This would seem to have been the nail in the coffin of vitalism, but as I say, it lived on.

Was it a good or bad thing that vitalism has lived on? Maybe some of both. To start with the bad part, consider the following effort on the part of Dr. Duncan MacDougall of Haverhill, Massachusetts, who in 1907 proposed to measure the weight of the human soul. He had patients who were about to die of tuberculosis: he put their deathbeds on a scale, and measured the weight change as they died. The science was bad—really bad—and he got a deserved skewering in the press for it. But bad science was not the worst of it: his metaphysics was worse. This is the problem with vitalism, why essentially all scientists hate it, and with some good reason—though, as I will continue to say, they just might, to use the cliché, be throwing the baby out with the bathwater.

Here are three complaints against vitalism:

1. It attempts to posit a negative. This was Pasteur's error: claiming that fermentation *cannot* occur without living cells.
2. Vitalism is *content-less*. This was the criticism of Theodor Schwann and other 19th century mechanists,[16] who argued that a force is a *force* only if it can be measured.
3. It's hopelessly vague – a vague squishy concept and consequently, prone to junking up.

Now, Henri Bergson attempted to rescue "the baby", as it were, by positing what he called *élan vital*, which is inadequately and inaccurately translated as "vital force" – and for this reason, he got pilloried by the likes of Julian Huxley, otherwise known as Darwin's Bulldog, who said this: "To say that biological progress is explained by the *élan vital* is to say that the movement of the train is 'explained' by an élan locomotif of the engine."

The issue, however, is what one means by "explain." When it comes to "weighing the fish," let's concede that *élan vital* has no explanatory power.

16 These also included du Bois Reymond, Helmholtz, Ludwig, and Brücke. See John Scott Haldane, *The Sciences and Philosophy*, Lecture II: The Rise of Mechanistic Biology, https://www.giffordlectures.org/books/sciences-and-philosophy/lecture-ii-rise-mechanistic-biology.

What else can "explain" mean? Why is it that at times weighing the fish is not enough?

Pasnau gave his own answers to this question, and I recommend this opinion piece if you haven't seen it. But I want to start my answer by going back to James Joyce's *Ulysses*, this time Episode Nine. In this Episode, Stephen Dedalus expounds his theory on Shakespeare in the National Library in Dublin. Among the listeners is George William Russell, theosophist and poet, who went by the pseudonym, *AE*, standing for "aeon." In an interior monologue peppered with Shakespearean idiom, Joyce rendered Stephen's thoughts during an interlude between two parts of his exposition on Shakespeare as follows:

> How now, sirrah, that pound he lent you when you were hungry?
> Marry, I wanted it.
> Take thou this noble.
> Go to! You spent most of it in Georgina Johnson's bed, clergyman's daughter. Agenbite of inwit.
> Do you intend to pay it back?
> O, yes.
> When? Now?
> Well…No.
> When, then?
> I paid my way. I paid my way.
> Steady on. He's from beyant Boyne water. The northeast corner. You owe it.
> Wait. Five months. Molecules all change. I am other I now. Other I got pound.
> Buzz. Buzz.
> But I, entelechy, form of forms, am I by memory because under everchanging forms.
> I that sinned and prayed and fasted.
> A child Conmee saved from pandies.
> I, I and I. I.
> A.E.I.O.U.[17]

17 Joyce, *Ulysses*, 182.

The impecunious Stephen Dedalus borrowed a pound from AE, claiming hunger, but as was his wont, spent it instead on his favorite prostitute, Georgina Johnson—and for this he has *agenbite of inwit*, ("remorse of conscience," from the title of a confessional work written in a Kentish dialect of Middle English). He intends to pay AE back—someday, maybe. He recalls how his some-time boss, Mr. Deasy, had berated him for his spendthrift ways, for as Deasy proclaimed, the proudest boast of any Englishman was "I paid my way." But then again, that was Mr. Deasy; Mr. Deasy is easily dismissed, for he is either a Unionist (favoring Ireland's remaining part of Great Britain) or worse, an Orangeman. ("Beyant" is Irish dialect for "beyond," and "The Boyne Water" is an Ulster Protestant folksong commemorating the victory of King William III of Orange over [Catholic] James II at the Battle of the Boyne). In other words, by the rules of the governing (British) force—the "establishment"—he must pay. But is this enough? Can he escape payment on account of being an oppressed Irish subject? Not really.[18]

Then comes a brainstorm: he devises a clever stratagem. He got the pound five months ago, and in the meantime, his molecules have all changed; so it was an "other I" that got the pound, and if this is correct, there should be no need for the current "I" to repay it. But he realizes that this stratagem just won't work. As he says, "But I, entelechy, form of forms, am I by memory because under everchanging forms."[19] Here Dedalus plays with the word "form": although his appearance—the external form of Stephen Dedalus—is ever-changing, there is something that underlies it all.[20] And this is "entelechy, form of forms"—that is, the actuality, the realization of the Form, which underlies all these various superficial "forms." But how does he even know that such a thing exists? He knows it "by memory": however much the molecules might change, there is a unified "I," an entelechy under all of the "everchanging forms": the "I that sinned and prayed and fasted", and the "I" that, in *A Portrait of the Artist as a Young Man*, Father Conmee had saved from

18 Stephen Dedalus, though not unionist, also is not much of an Irish nationalist. He disdains most enthusiasms.

19 Joyce, *Ulysses*, 182.

20 Dedalus had pondered the issue of change—the modality of the visible and the auditory—earlier in the novel, in Episode 3, which begins with the memorable phrase, "The ineluctable modality of the visible."

an unjust pandying.[21] Memory is a power of the soul, according to Aquinas, whom Dedalus quotes early and often. In the end, there might be many I's: "I, I and I"; but they all somehow add up to just one "I." The conclusion is inevitable—or, if you will, ineluctable. There is no way out: "A.E.I.O.U."

This execrable pun (all good puns are execrable) tells us that the unity of the soul, which Stephen Dedalus knows through a power of the soul—memory—entails moral responsibility.[22] To cut a very long argument *very short* in the interest of time/space: moral responsibility requires personhood, and for this one needs a soul, or as Stephen Dedalus said, *entelechy, form of forms…by memory*.

Stephen spoke about molecules all changing in five months. There is a similar and somewhat lighthearted fictional treatment of a serious medical-ethical question from Charles Finney's *The Circus of Dr. Lao*. There is a minor character, the Lawyer Frank Tull, who has many artificial parts – which in modern, medical practice could resemble prostheses (e.g., artifical heart valves) or transplants. Does it follow that he ceases to be Frank Tull? This is, really, a variant of an ancient philosophical question: the Ship of Theseus.[23]

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21 This is a clever rhetorical flourish: even if the reader of *Ulysses* doesn't know this, Joyce lets us know that Stephen Dedalus does. Or maybe Joyce just assumed that we've all read *Portrait of the Artist as a Young Man.*

22 In the novel, two of the protagonists, Stephen Dedalus and Leopold Bloom, ponder the relationship between body and soul. In a sense, both view body and soul as unified, but with a difference. To Bloom, the soul enters the body; hence, it can also leave the body and enter a different body—a theme that the novel explores as *metempsychosis*, the transmigration of the soul. But Bloom's attitude leads to the dismal conclusion that at death, nothing of the person survives; souls are only rented for a term of time. Earlier in the novel (Episode Six), Bloom attended the funeral of one Paddy Dignam. Seeing him being buried, Bloom reflects on the heart: "A pump after all, pumping thousands of gallons of *blood* every day. One fine day it gets bunged up: and there you are. Lots of them lying around here: lungs, hearts, livers. Old rusty pumps: damn the thing else. … Once you are dead you are dead" (102). True, according to some; if there are only atoms colliding at chance, if there is only matter in the universe, then why should it be anything but a matter (no pun) of indifference whether the pump gets rusted and "bunged up", and once you're dead you're dead. In any event, this is of a piece with the view that the heart, or any other part of the anatomy is mere material and mechanism. In contrast, for Dedalus, supersaturated as he is with the philosophy of Aristotle and Thomas Aquinas, it would be more accurate to say that the body is in the soul than that the soul is in the body, which would allow an inference that the soul is subsistent, i.e., it might subsist after death, after the separation of body and soul.

23 In the talk, I gave the version from Plutarch, though there are many variants, including one from Hobbes.

Joyce's citation of Aristotle, both directly and by way of Thomas Aquinas, reminds us of the four ways in which *cause* is spoken of. In the interest of time, I don't think we need to review this, but I would be happy to discuss it later. My main point is this: I contend that while formal and final causality may be beyond the reach of laboratory science, they are not necessarily impossible for the universe.

If defining disease and health in terms of one another is "Nosological Manicheism", then let us call the approach I will advocate "Nosological Thomism," after Thomas Aquinas. In brief, we cannot help ourselves: opposing health and disease, like opposing good and evil, is an epistemological necessity: we cannot otherwise conceive of these things. But it is essential to distinguish between the epistemological plane—how we know things—and the ontological plane—what things are—even if we do not *fully* know what things are.

I want to recapitulate a few points about the epistemology of Thomas Aquinas very briefly, but we can continue this discussion later.

Thomas's epistemology emphasizes the centrality of empirical data and sees the acquisition of knowledge (I am confining this discussion to "natural reason", i.e., unaided by revelation) as the abstraction of essences or universals, starting with observation of the created world. As such, his epistemology is especially congenial to science.

In spite of how much Thomas Aquinas credits the human intellect with, his epistemology also includes serious limits on what we can possibly know. We do not perceive essences directly, and even less can we understand Existence (*Esse*). The metaphysical principle that underlies the latter statement, like so much else in Thomas's metaphysics, is that in God, and in God alone, existence and essence are the same. For much the same reason, we can know something *about* the transcendentals, but not the transcendentals *in themselves.*[24]

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24 Recall that Thomas identified the following as transcendentals: Res (thing), Unum (one), Aliquid (something), Bonum (the good), Verum (truth). Opinion is divided on whether he included Pulchritudo (beauty) among the transcendentals. Aersten said no, Maritain said yes. Gilson tended towards "yes". Aersten's argument is that Thomas wrote of beauty and goodness that they are the same in reality, differing only in appealing to different faculties (the cognitive faculty for beauty, the appetites for goodness); therefore it would be redundant to speak of beauty as a transcendental. A relevant quote, from Thomas Aquinas, *Summa Theologiae*, trans. Fathers of the English Dominican Province (New Advent, 2017): Ia q.5 a.4, www.newadvent.org/summa/1086.htm, is: "Beauty and goodness in a thing are identical fundamentally; for

I cannot go into details here,[25] but the answer to the question I posed at the start of this talk derives from this point. It also follows from this that attempts to define words like "life" and "health" inevitably will be futile.

Yet, Thomas also maintained that it is possible, indeed necessary, to know something about the transcendentals and about God. Much of what we know about God and about the transcendentals is through negation. For example, quoting Aristotle, Thomas noted that "the infinite, considered as such, is unknown, since "on material things the infinite does not exist actually, but only potentially, in the sense of one succeeding another, as is said Phys. iii, 6."[26] We form only inexact ideas of infinity – and yet, we *can* form *some* inexact idea of it. The same is true, *a fortiori*, of God, Who is "a form unlimited by matter". We *must know something* of God: as Thomas wrote, "if the intellect of the rational creature could not reach so far as to the first cause of things, the natural desire would remain void."[27] And this, the optimistic Thomas finds impossible. At the same time, "we cannot know God in our present life except through material effects."[28]

Even when it comes to ordinary material things, there are also limits. Thomas states:

> Science treats of higher things principally by way of negation. Thus Aristotle (De Coel. i, 3) explains the heavenly bodies by denying to them inferior corporeal properties. Hence it follows that much less

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they are based upon the same thing, namely, the form; and consequently goodness is praised as beauty. But they differ logically, for goodness properly relates to the appetite (goodness being what all things desire); and therefore it has the aspect of an end (the appetite being a kind of movement towards a thing). On the other hand, beauty relates to the cognitive faculty; for beautiful things are those which please when seen. Hence beauty consists in due proportion…"

Maybe this means only that moderns *care* a whole lot more about beauty than the medieval did. Another argument against including beauty among the transcendentals: Thomas Aquinas never explicitly included beauty among them.

25 This argument appears in my nearly completed book, *Disease and the Problem of Evil*.

26 Thomas Aquinas, *Summa Theologiae*, 2nd rev. ed., trans. Fathers of the English Dominican Province (New Advent, 2017), Ia q.86 a.2, www.newadvent.org/summa/.

27 Aquinas, *Summa Theologiae*, Ia q.12 a.1.

28 Aquinas, *Summa Theologiae*, Ia q.86 a.2.

> can immaterial substances be known by us in such a way as to make us know their quiddity; but we may have a scientific knowledge of them by way of negation and by their relation to material things.[29]

What is translated, here, as "science" is *scientia*. Thomas (and many others) distinguished between *cognitio* and *intellectus*. *Cognitio* is how sensible and intelligible features of the world, and propositions concerning these features, are understood. *Intellectus* is a further form of knowing, which concerns the most basic propositions—the first principles that constitute the various "sciences," which include mathematics and logic, as well as the natural sciences. His understanding of the neuroscience behind these processes, which he derived almost unmodified from Albertus Magnus, Ibn-Sina and earlier authors, is antiquated and incorrect, yet it was an attempt at neurological localization and mechanism.

The quote above from Thomas Aquinas deals with the question of whether corporeal beings like us can understand immaterial substances, and the particular case he considers are incorporeal beings—the angels. But the issue for us need not be angels, in which, in all probability, many or most of us do not believe. Rather, the quote is in line with the approach of speaking of God in the *via negativa*, in which saying that God is infinite is to say that He is not finite, or saying that God is simple amounts to saying that he is not composite, and so forth. What is true for *created* immaterial substances is infinitely more true for the uncreated immaterial being, God.[30] But even for material things—"bodies," in his parlance—knowledge, both *cognitio* and *intellectus*, consists of the rendering of the corporeal into the incorporeal territory of the intellect.

Yet at the same time, Thomas's approach is not purely negative, for there is always, simultaneously, the possibility of the *via affirmitiva*: ways in which we can describe even God positively—through the things that are made. We can describe God as wise, for example, and in doing so, we are ascribing to God a quality we know only in nature—that is, in wise human beings. It is true, of course, that in God we understand that the quality of wisdom exceeds

29 Aquinas, *Summa Theologiae*, Ia q.88 a.2.

30 Aquinas, *Summa Theologiae*, Ia q.88 a.3.

anything we experience in nature and with our limited natures.[31] Within these boundaries, positive knowledge of God and of metaphysics is possible.

I will close with a few very brief reflections on an important topic that I treat in detail elsewhere:[32] the relationship between disease and the Problem of Evil. To a reader grounded solely in the sciences, it might seem odd to say that medicine and pathology also have a metaphysical side, and how one thinks about disease is, in a larger part than some people realize, fundamentally a religious question. To say this is not to espouse any one particular religious tradition, and for that matter, atheism is also a religion, or at least, a religious stance. Physicians and others who treat patients – who try to give comfort to people suffering from disease, or to those whose lives and well-beings are threatened by disease – can be said to *fight against* disease. This is for them a particular species of fighting against evil. One can recognize the large measure of self-interest in "privileging" health over disease, or life over death; but is there any other reason? Put more broadly, is there any reason to "privilege" what one (let's keep this as general as possible) calls "good" over whatever one calls "evil"?

In *The Consolation of Philosophy*, Boethius wrote, "Si Deus est, unde malum? Si non est, unde bonum?"[33] From this succinct statement of the Problem of Evil, the first question is posed frequently, the second much less so. Boethius left unsaid the usual expansion of the problem of evil by not specifying that by "God", he was referring to one God who was both omnipotent and omnibenevolent;[34] this was to be understood. Thus, God's omnipotence *could* prevent evil, and His omnibenevolence *would* prevent evil – yet plainly evil exists in the world. As is well known, the response of

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31 This is a complex question which space will not allow us to go into. In brief, words like "exceeds", and analogy more generally, are problematic because they suggest proportionality between God and creatures, but the gap between God and creatures is incommensurable.

32 As stated above, this argument appears in my nearly completed book, *Disease and the Problem of Evil.*

33 "If God exists, whence evil? If not, whence good?" Boethius, *De Consolatione Philosophiae* (The Project Gutenberg, 2004), IV, www.gutenberg.org/files/ 14328/14328-h/ 14328-h.htm.

34 The fuller statement of the problem of evil appears as a full *trilemma*, for example, in David Hume's *Dialogues Concerning Natural Religion*, where it is attributed to Epicurus, and probably derived from statements in Lucretius's *De Rerum Natura.*

Augustine and Thomas Aquinas to this problem centers on the significance of the word "exists" – not to deny that there is evil in the world, which is obvious to anyone, but to deny that evil has its own nature and subsisting existence. I find it useful when discussing this topic to refer to existence, as Étienne Gilson did,[35] using the original Latin, *esse*.

We'll leave aside this complicated set of questions and focus on the second half of Boethius's statement, one that not infrequently is left unasked. Not entirely unasked, however, for, notably, Nietzsche asked whether we are about to go beyond good and evil. Is the good nothing more than naked self-interest – or, if one is a biologist, a useful adaptation? Returning for now to the humbler ground of medicine and disease, how should one think about health and disease as examples of good and evil, respectively – or should one not do so? Is "health" merely another name, in the sphere of biology, for naked self-interest or useful biological adaptation?

I will briefly state, without defending (which I do elsewhere), one answer to these questions. In order to think about life and death, or health and disease, as goods – to "privilege" them over disease and death – one must grant them a portion of esse, with a nature or essence. Such an analysis, like that of Thomas Aquinas's analysis of evil, depends critically on being able to separate epistemology from ontology. The most fundamental principle in Thomas's epistemology starts with the statement that in God, essence and existence are the same; as we cannot (in this life) know God's existence through direct observation, we also cannot know essences directly. Rather, we garner data about our world empirically, through our senses and then make inferences and generalizations, working our way asymptotically towards essences.

In any case, the fact that we cannot know essences directly but can only make inferences about them—write poems about them, as it were—does not mean that we should put on blinders and believe only that which we can see, hear, touch, smell and taste. There is, in other words, such a thing as life, even if we cannot see directly, it as it is, with our earthly eyes.

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35 In many works, but see, for example, Étienne Gilson, *Being and Some Philosophers*, Pontifical Institute of Mediaeval Studies; 2nd edition, 1952.

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HEALTH - II

What is Life? A Theological Response

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Let me start by playfully modifying a passage from the Gospel of John (14:5-6): "Thomas said to him, 'Lord, we do not know where you are going. How can we know the way? Jesus said to him, 'I am the way, and the truth, and the life. No one comes to the Father except through me.'"[36]

This passage seems supremely fitting for a conference that has taken up a question about the nature of life. And as with almost all Biblical passages, it is easier to declaim its words but far more difficult to illuminate its intelligibility. What does Jesus mean when he identifies himself with "the life?" This is what I would like to explore with you all today.

In order to present a fitting interpretation, it is necessary at the outset to present the principles that will guide our approach. Let me list them here so as to allow us to anticipate their appearance as we proceed.

Principle one: there is no tradition-less being in the world.

Principle two: that which cannot be explained can still be storied.

Principle three: Jesus Christ, who once lived, died, and rose from the dead, ascended so as now to take the form of His Church, and we might say IS the form of Christianity itself.

With these in mind, let us attempt to render Jesus' self-identification as "the Life" more intelligible.

36 John 14:5-6 NRSVCE

I

All human beings arrive into communities already underway. To live a human life necessarily entails being given to some community held together by an "argument" as Alisdiar MacIntyre puts it, "extended through time in which certain fundamental agreements are defined and redefined"[37] often according to conflicts both internal to the community itself and external with other communities.

This is what we theologians mean when we speak of 'tradition.' As Sandra Schneiders characterizes it, "Tradition is the actualization in the present, in and through language of the most valued and critically important aspects of the community's experience, or more precisely, of the community's experience of itself as it has been selectively appropriated and deliberately transmitted. Tradition is the primary form and norm of effective historical consciousness, which is the medium of ongoing community experience."[38]

Therefore, human life is inescapably a life lived in tradition, or to reiterate our initial articulation, there is no tradition-less being in the world.

The first reason this is important to state upfront is because how one approaches questions about life (and death, we should probably add) are in large measure determined by the tradition that has laid claim to the one asking the question. Tradition serves as one of the most primary and important conditions for the possibility of asking and responding to questions of any kind, especially those about life and death.

The second reason this principle is important to foreground is that the truth of this first principle, that there is no tradition-less being in the world, has been obscured by the dominant tradition today—what most scholars identify as "the Liberal tradition."

As Francis Fukuyama so eloquently wrote in The End of History and the Last Man, arguably the apologetic text of the Liberal tradition, with the ascendancy of the Liberal tradition, history now comes to an end because in Liberalism, human beings are finally fully human—that is, they now bear the

37 Alisdair MacIntyre, *Whose Justice? Which Rationality?* (South Bend, IN: University of Notre Dame Press, 1989), 12.

38 Sandra Schnieders, *The Revelatory Text: Interpreting the New Testament as Sacred Scripture* (Collegeville, MN: The Liturgical Press, 1999).

final form of the human being; we are therefore, all of us, the 'last man'—that is, the final form of humanity.[39]

Since to be fully human means to be "Liberal," according to the Liberal tradition, all other traditions are reduced to mere adornment to be chosen (or not) as one lives out one's otherwise Liberal human life. Christianity, Judaism, Islam, Taoism, Buddhism, indeed all the once great traditions that helped shape the world, are now rendered mere choices that add ornamentation to the final form of humanity that only the liberal tradition can provide. The values these once great traditions espoused are certainly allowed to have a voice in Liberal society, but only if those voices agree to silence themselves the moment the Liberal voice begins to clear its throat.

My intention here is not simply critique, but rather critical appreciation. I am grateful, after all, for some of the values that have been foregrounded by the Liberal tradition, and I would rather live here and now than any other time or place. I would even extend this to what the Liberal tradition has enabled us to know about the nature of life, and in particular human life.

One reason behind Fukuyama's triumphal claims about the Liberal tradition derives from his understanding of how it has harnessed the powers of science and technology in ways that not only reveal a deeper sense of what human life involves, but also improve conditions in which human life may flourish. It has certainly enabled our late modern world to affirm the basic mechanistic elements of life. Life, as such mechanistic explanations would espouse, entails substantial growth, self-motility, and, in principle, the ability to reproduce.

But as necessary as these elements are for recognizing something as alive, they do not exhaust the full nature of life and thus do not constitute a fitting framework for our purposes; clearly Jesus meant more than, "I am the ability to substantially grow, to move, and to reproduce." These are certainly important elements of the nature of life, but given their empirical contours they remain partial and thus incomplete without a fuller sense of what it means to live a human life.

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39 Francis Fukuyama, *The End of History and the Last Man* (New York: Free Press, 1992). It may not need mentioning, the term 'Liberal tradition' does not identify the political left today, but the whole ethos that comes into being around the 16th/17th century and now includes many factions: liberal, conservative, neoliberal, neoconservative, libertarian, progressive, et al.

II

If we are to transcend the limits of empirical explanations of life, we must turn to our second principle: that which cannot be explained can still be storied. The word "explain" comes from two Latin roots: "ex," meaning "out" and "planus" meaning "to flatten." So, etymologically the word "explain" means "to flatten out." That is, our late modern, or Liberal, proclivity to explanation is bound up with a kind of reduction of the world to our human image, a reduction of the complexities we often seek to explain.

Now, often, the complexities that constitute life are indeed rendered more intelligible by means of explanation, that is, by flattening that complexity out into something that fits into our concepts and categories, those cognitive tools that enable us to think in determinate, discursive, and dianoetic ways to acquire a degree of mastery over the world. Indeed, the force of explanation has proven to be so powerful that the Liberal tradition espouses it as the most effective way to understand the world. Explanation has disciplined the Liberal habit of mind so much so that those features of our existence that appear to defy explanation are commonly viewed as irrational and insignificant and thus unworthy of our attention.

The problem, however, is that there are many phenomena in human life that defy explanation, that resist the will to determination that derives from our explanatory efforts. Take, for instance, phenomena like faith, freedom, love, and beauty, or even disability, trauma, and suffering. Each bears more meaning than explanations can convey, that is, each bears a plenitude of intelligibility that, although inviting our explanatory efforts, remain always in excess of those efforts. Indeed, every element of human life that makes life worth living seems to defy the reductive will to explanation that is part of the currency of the Liberal tradition.

This is one reason Augustine famously proclaimed, "if you want to understand, you must first believe."[40] Belief, as Augustine knew well, involves participation in the plenitude of a phenomenon's intelligibility, a participation in the very conditions that allow understanding to arrive. Belief

40 Augustine of Hippo, *Homilies on the Gospel of John*, trans. Edmund Hill, O.P (New York: New City Press, 2009), Homily 29, 6.

brings an openness, understanding brings closure. Belief is other-oriented, understanding is more self-oriented. In this light, then, we might repurpose Augustine's insight and say, "if you want explanation, you must first story."

If we are to render Christ's identification with life intelligible, we must view it through this lens. Although much can be learned about the nature of life, of human life, from our scientific explanatory powers, life remains always in excess of these powers. Life, to borrow a term from the contemporary French phenomenologist Jean Luc Marion, is a saturated phenomenon: an arrival of being that is more than its appearance.[41] Or, it might be described in the language of contemporary philosopher William Desmond: life is a hyperbole of being—that is, the presence of something transcendent within the immanent emergence of being, rendering being in excess of all finite cognition even as it invites finite cognition to deeper understanding.[42]

In both senses, life is a phenomenon that exceeds our human capacity to explain, even though explanation helps in its own way. Rather, as a plenitude of intelligible content, as a saturated phenomenon and a hyperbole of being, life shows itself to be more effectively made intelligible through a power of storying. For, as our second principle states, that which cannot be explained can still be storied.

Jesus knew this all too well, which is why his pedagogy was parabolic before it was explanatory. The realities of the Kingdom of God can never be simply reduced to our cognitive mastery, but are most effectively communicated through parables, stories, that invite as much subjective participation by the listener as they reveal objective truths.

The primary reason we are storying creatures before we are explanatory derives from the fact that human life is, from origin to end, immersed in the phenomenon of beauty, immersed in the beautiful itself. As the ancients and medievals knew well, beauty identifies being's appearance, which necessarily involves symmetry, harmony, proportion, diversities-in-unity, and many other modes of beauty's arrival. One of beauty's most significant modes of

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41 See, e.g., Jean-Luc Marion, *In Excess: Studies in Saturated Phenomena* (New York: Fordham University Press, 2004).

42 See, e.g., William Desmond, *The Intimate Universal: The Hidden Porosity Among Religion, Art, Philosophy, and Politics* (New York: Columbia University Press, 2016).

appearance is as a plenitude of intelligible content that, precisely as a plenitude, anagogically provokes the human intellect to ever deeper and more noble realities of existence.

Consider two forms that beauty takes in human life: humor and music. Both are intelligible to human intellects in ways that exceed explanation and discursive understanding. Indeed, when human beings attempt to explain either humor or music, the most salient aspects of those phenomena quickly begin to dissolve. One is reminded of the cartoon depicting a new arrival into heaven and God telling him "if I have to explain the meaning of life to you, it won't be funny." Beauty reveals that human life, especially at its most desirable moments, occupies a fullness, a plenitude, where we are opened to, as St. Paul puts it, "the one in whom we live, and move, and have our being."[43] Beauty unclogs our natural porosity to the divine fullness that funds our daily existence.

Human life is an experience of God's very being, but experienced as a fullness, a plenitude, something that, precisely because it is too much for us, distills itself over a lifetime as a call, inviting us ever more deeply into intimate relation with it. But such experiences remain unintelligible and without meaning until they are brought into our economy of language, enabling us to discern meaning.

Here it becomes possible to recognize, as the medievals loved to do, a Trinitarian vestige within the structure that constitutes human life; namely, the Trinity of Experience, Language, and Meaning.[44]

God the Father, the One in Whom we live and move and have our being,[45] the One Who identifies Himself as existence, as Being itself,[46] is the condition for the possibility of any and every Experience. God the Son, who assumes a

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43 Acts 17:28.

44 One way to define "meaning" here is: *a discerned valence, interpreted for* behavioral *output.* Human beings are creatures immersed in a range of valences, forces of attraction, that call to us every moment of our existence. To harness "Meaning" requires that we discern which valence to attend to, and once attended, we interpret the valence in order to integrate it into our act of life, that is, the behavior we put out into the world.

45 Acts 17:28

46 Ex 3:14

human nature in the person of Jesus Christ, is also identified as God's Word, the condition for the possibility of Language and thus of all communication and interpretation. The Holy Spirit, the one that the Nicene Creed identifies as "the Lord, the Giver of Life," then corresponds to Meaning in this Trinitarian vestige. Here, experience can only become meaningful through language, through the Word.

III

So perhaps we can register a first interpretive insight into Jesus' self-identification with "the Life": as God's Word, Jesus—the Christ form—is "the Life" because the Christ-form gives meaning to life, makes life full of meaning, makes life meaning-full. To draw attention now to our final principle, Christianity, as the tradition of the Christ-form, bears the task initiated by Jesus, and can also be identified as "the life." This is because in the Christian tradition, one is given the story of Christ and thus the most powerful Language, enabling one to discern Meaning in every Experience—even, and especially, the experiences of trauma and suffering. I would like to conclude by unpacking this claim in light of all that has preceded.

As I have suggested already, there is a significant difference between the Liberal tradition's storying of human life and the Christian tradition's storying of human life—what we can now call their respective anthropologies. And perhaps the best story to tell about the relationship between the two comes from Jesus' parabolic pedagogy itself, and in particular, the parable of the prodigal son.

Much like the younger son in the parable, the Liberal tradition is a tradition that takes its inheritance from its parent Christian tradition and ventures forth into unknown territories. Like the younger son, the Liberal tradition is motivated by a new desire for independence and autonomy, a desire to break free from authority of the Father and experience a world beyond the Father's home. Indeed, there is something reflective of the nature of all human life in this—to be human is to be a creature that ventures out of itself, that risks suffering the unknown, the unpredictable, the untamed.

But a problem arises when the Liberal tradition advances this venturing

experience as the most basic mode of human life, what scholars in the field of disability studies refer to as a "best case anthropology."[47] The anthropology at the heart of the Liberal tradition is constructed according to those limited years, usually between the ages of eighteen and thirty-five, in which a majority of human beings do indeed experience the initial thrill of prodigality and the independence and autonomy it brings.

The problem, of course, is what does this do for those denied any independence or autonomy, whether by circumstance of birth, unintended trauma, or the phase of one's life? After all, to live a human life means to be far more dependent than independent. For an anthropology constituted on a foundation of total independence, those who remain dependent—the disabled, the young, and the elderly—stand as living critiques of this anthropology in their very being. They are seen as bearers of human weakness, which is why our world will always be haunted by the demons of eugenics—as living embodiments of the weakness of human life, the disabled will always be viewed by those subscribing to an anthropological story of independence and power as anomalies to be marginalized or completely eradicated.

For this reason, as Stanley Hauerwas has recognized in so much of his theology,[48] our so-called disabled brothers and sisters are the bearers of a power that alone can awaken our late Modern Liberal tradition from its ever-intensifying momentum toward the "best-case" anthropological story it tells; a story that is inherently alienating of the meek, the mournful, the marginalized.

And even though in its most recent progressive form, the Liberal tradition tries to integrate disability into its story, it is simply without the resources to do so, for it lacks the story of a God who reveals that human life is inherently disabling, broken, and weak, a God whose love therefore moves Him to assume trauma, suffering, and even death into Himself. Only the Christian story bears such a plot and thus only the Christian story can really do justice to the full scope of human life, which is indelibly bound up with trauma, suffering, and disability.

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47 See e.g., *Disability in the Christian Tradition, A Reader*, ed. Brian Brock and John Swinton (Grand Rapids, MI: Eerdmans, 2012), 2.

48 See, e.g., *Critical Reflections on Stanley Hauerwas's Theology of Disability: Disabling Society, Enabling Theology*, ed. John Swinton (New York and London: Routledge, 2004).

Does not the prodigal son come to such a realization when he finds himself shamefully eating the food he is supposed to be feeding pigs? Is it not at that moment that he realizes his grasping after a false sense of strength and power beyond his father's home that he becomes painfully aware of how disabled he is? And is it not at that moment that he also begins to construct a new story about himself, his Father, and his prodigality, one that at least provides a moment of metanoia, enabling him to take his first steps back home?

To be sure, it is not a happy story on any account. It is a tragic story in which the prodigal is no longer a son but a slave, capable of dwelling in his Father's home only under conditions of servitude. It is a story in which his Father is no longer a loving source of comfort and sustenance, but a stern judge who is all too ready to punish. Yet for all its demerits, it is a story that is strong enough to provoke the prodigal to begin the long, shameful return back to his true home.

While he is on that way home, even before he arrives, he is surprised by the irresistible story that the Father embodies and proclaims in his response – the Christian story at its most resplendent and glorious. It is the story of a Father's unceasing love even in the face of rejection and self-exile. It is a story that will eventually enable the prodigal son to come to integrate his prodigal trauma and suffering, indeed, his prodigal disability in the light of a love he could never have imagined. It is a story that gives him a language through which his experience as prodigal will reveal a sense of meaning he could never have anticipated but that now integrates his experience of prodigality into his fuller story of redeemed human life.

And so we can conclude with a final insight into Jesus' identification with "the life": Jesus is "the life" because he is the suffering servant, that is, the form of God who assumes even the disintegrating forces of trauma, suffering, and therefore all disability—the most alienating experiences in human life.

As the tradition of the Christ-form, Christianity gives us the Word, the language, that enables us to story those aspects of human existence that seem to disintegrate our lives. What can be more powerful than a story like this? To be sure, it is not that Christ and Christianity allow us to derive some kind of discursive or dianoetic meaning from suffering; that would entail a reduction of suffering's plenitude to explanation.

Rather, the God who assumes suffering in the person of Jesus Christ enables those living human lives to know that the pain and ugliness of one's suffering is never the end of the story. In Christianity, human beings are given the only Word capable of uttering what Leonard Cohen called a "cold and broken hallelujah"—a Word of adoration in the midst of degradation, a vision of glory in the face of humiliation, a vision of beauty in the fog of ugliness. It is a story that invites others into its telling and inspires diverse forms of telling. It is a story that allows one to become the bearer of God to and for others. Indeed, such a story enables us to take up Jesus' words in John 10:10 as our own—"I came that they might have life, and might have it abundantly."[49]

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49 John 10:10

POST-CONFERENCE REFLECTIONS FROM STEPHEN C. MEREDITH AND BRENDAN THOMAS SAMMON

STEPHEN C. MEREDITH

Thomas Aquinas wrote that the truths, plural, that philosophy deals with are *the preambles of faith*. John F. Wippel commented:

> By "preamble of faith" Thomas has in mind a truth concerning God or the world that can be established by natural or philosophical reasoning and that is in some way presupposed for faith or for making an act of faith. While such a preamble is not in itself an article of faith, it is logically implied by or presupposed for what is indeed an article of faith. As examples Thomas always cites our knowledge that God exists, usually also that he is one, along with other truths of this kind, a number of which he identifies for us in various texts, but without ever giving us a complete list.[50]

That he never gave us the complete list of philosophical truths should not be surprising—certainly not in an age when scientists, among others, are accumulating terabytes[51] of new data every day. Clearly, Thomas had read a great deal of philosophy—not only what he called natural philosophy and we now call "science," but many other kinds—and was duly impressed. The philosophical truths that Thomas considered knowable by human beings in the absence of revelation constitute the Questions at the start of his *Summa Theologica*. We could *know*, he said, that God exists. To know this was not optional; to pretend otherwise was, as the lawyers now say, actionable. We could know, also, that God is good; that He is completely

50 John F. Wippel, "Aquinas on Creation and Preambles of Faith," *The Thomist* 78, no. 1 (2014): 2.

51 Or maybe peta-, exa-, zetta-, or yottabytes.

simple, lacking all composition and complexity; that He is infinite; that He is eternal; that He is just; that He is merciful and provident.

The problem, however, is that we don't really know what any of these terms mean, starting with "exists," but continuing on to "good," "simple," "infinite," and so on. This point leads to what I referred to in my essay as the *via negativa* (in theology, also sometimes called apophatic), in which Thomas harkens to a long tradition that includes Pseudo-Dionysius the Areopagite. We know of God's simplicity, for example, only by comparison with what we observe in the world, which is (for corporeal beings) a composite of form with matter.

As I also mentioned, for the optimistic Thomas, it would be impossible for our natural desire to know the first cause of things to remain void, so the *via negativa* implies the existence of a *via positiva* (in theology, sometimes called cataphatic). That philosophy—knowledge obtained through the use of reason unaided by revelation—is a *preamble* to anything implies that there is *something that it can lead to* (under the right circumstances), which is faith.

But this leaves us to face what seems to be an unsolvable problem, which can be stated, in a nutshell, as follows: if we're so damn smart that we can do philosophy, why should we believe anything that cannot be proven?

This is exactly the problem David Foster Wallace tackles in *Infinite Jest*. In a mere 500 words (or so) one can, at most, give a synopsis of one example of how Wallace illustrated this problem, and for this purpose I will use the story of one character, Don Gately. The book has a complicated plot (a gross understatement) and a zillion characters (not an exaggeration), but to summarize: Don Gately is an absolutely enormous man with a gruff exterior but a kind heart; he was raised under horrific circumstances and became a Demerol and Talwin addict (though he started with alcohol) and a part-time burglar. He lands in a world of trouble, legal and other, but manages to transcend his circumstances. His efforts are heroic, though this statement requires an asterisk. It's a long story, but he manages to attain a prolonged and ongoing stretch of sobriety and become a counselor in residence at Ennet House, a halfway house for addicts. His heroism is not only in protecting his charges, including taking a bullet for one of them;

even more, it is his internal and psychological conquests that make him heroic.[52] Near the end of the (thoroughly non-linear) time frame of the novel, Don Gately is lying in a hospital bed, with a critical gunshot injury, flitting into and out of consciousness, pondering the trajectory of his life. His heroism includes refusing to take even prescribed drugs, for fear of being dragged back into substance addiction, the "Disease," the "Spider."

To the extent that he has gotten his life straightened out, he clearly owes a lot to AA and similar organizations, which at first he attended not by choice but by force. The problem he encountered right away was that AA requires surrender to what they call a "Higher Power," but this is clearly a circumlocution for God. Gately's problem was that he had no concept, not even a rudimentary one, of anything like a Higher Power. When he was forced to get down on his knees at meetings, he found it humiliating to pray to something he didn't believe in. When it was his turn to speak at one of the AA meetings—the *Tough Shit But You Still Can't Drink* group, made up mostly of bikers—he let it be known how much he hated the whole praying to a Higher Power thing: "at this point the God-understanding stuff kind of makes him want to puke, from fear. Something you can't see or hear or touch or smell: OK. All right, something you can't even *feel*? Because that's what he feels when he tries to understand something to really sincerely pray to. Nothingness."[53]

Part of Don Gately's problem with believing is that at the point in his life when he "hits bottom"—one of many AA clichés that Gately hated—he had already been, for a very long time, "a gifted cynic, with a keen bullshit-antenna."[54] It is the damn hipness, coolness, smug knowingness that gets in his way: he finds belief to be trite, a cliché, just a lot of stupid bullshit. The objections he raises are far from novel, and probably had been raised by many of his predecessors in Ennet House and AA. He

52 As I argue elsewhere, Wallace shares a lot with James Joyce, in his style and his conception of heroism, among other things. Don Gately is heroic much as Leopold Bloom is heroic (if he is) in *Ulysses*: not through any literal slaying of usurpers, like Odysseus, but through internal and psychological conquests.

53 David Foster Wallace, *Infinite Jest*, (New York: Little, Brown and Company, 1996), 444.

54 Wallace, *Infinite Jest*, 356.

asked, "How do trite things get to be trite? Why is the truth usually not just un- but anti-interesting?"[55]

But these skeptical, hip-cool-knowing questions give a hint of something else. When he talks about triteness, he has also already come a long way, for he has recognized that the truth is "not just un- but anti-interesting"—meaning that he has, if only partially and tentatively, recognized truth as truth. The previous quote speaks to "Nothingness," but this too is a kind of progress for him, for we also read:

> He says when he tries to pray he gets this like image in his mind's eye of the brainwaves or whatever of his prayers going out and out, with nothing to stop them, going, going, radiating out into like space and outliving him and still going and never hitting Anything out there, much less something with an ear that could possibly give a rat's ass.[56]

Gately, who is not well educated, does not know this, but the metaphor he used was quite similar to the one with which Blaise Pascal described the universe: "Le silence éternel de ces espaces infinis m'effraie!"[57]

How Gately finally arrives at a tenuously better place is a major subplot in this novel, which is well worth reading, even if you do not have a year to spare. The point, for now, is that the novel seems to represent Wallace's quest for authenticity, for sincerity, as opposed to the all-pervasive irony and "hipness" that he found to be ubiquitous in American culture,[58] but particularly in postmodern literature. This is a story—an important one—for another day.

There is one more point to make about Gately's story, and that is that his skepticism (to put a word onto it) about all that God/Higher Power stuff was not just ironical hipness: it was also based on what he saw in the world in general, and in his own hellacious life in particular. Not

55 Wallace, *Infinite Jest*, 358.

56 Wallace, *Infinite Jest*, 444.

57 "The eternal silence in those infinite spaces makes me afraid!" Blaise Pascal, *Pensées*, 206-201, (Texte Édité par Léon Brunschvicg, Garnier Flammarion, 1976, Paris), 110.

58 Not necessarily only American culture.

that this forms a justification for his deeds, some of which were wicked (even though they were never *malicious*), but he did have a very hard time growing up. He was abused starting (as he put it, characteristically) by his "like organic" father while he was "still in his mother's stomach."[59] His mother was clearly an alcoholic: "To the extent it's Gately's place to diagnose anybody else as an alcoholic, his mom was pretty definitely an alcoholic. She drank Stolichnaya vodka in front of the TV."[60] Don would soon be joining her in drinking, after she passed out, ostensibly to prevent her from drinking too much, but it is hardly a leap to say that he was self-medicating his own depression. In between the drinking, his step-father would abuse his mother, and if Don tried to intervene, he would turn his rage on Don. And so it went until he not only became an alcoholic and a drug addict, and dropped out of high school, but was soon an enforcer (because of his enormous size) to a brutal bookie, and a part-time burglar—and eventually, even a murderer. If one wanted to tone this down slightly, one can add the asterisk that perhaps this was "only" second degree murder. Again, this does not exculpate, but it does help to explain. The point is: that while Don was in his hospital bed recovering from his bullet wound, flitting in and out of consciousness, he asks this very pertinent question:

> it's a bit hard to see why a quote Loving God would have him go through the sausage-grinder of getting straight just to lie here in total discomfort and have to say no to medically advised Substances and get ready to go to jail just because Pat M. doesn't have the brass to make these selfish bottom-feeding dipshits stand up and do the right thing for once.[61]

This is the Problem of Evil, and as Hans Kung said, quoting Georg Büchner, the problem of evil is the rock upon which atheism is founded. Gately has suffered.

59 Wallace, *Infinite Jest*, 446.

60 Wallace, *Infinite Jest*, 446.

61 Wallace, *Infinite Jest*, 894.

To come back to where these reflections started: the story for us *now* is a question. If philosophy is a preamble to faith, how does one ever get to faith? One can also ask the *why* question. Why would one ever do so?

Thomas Aquinas was always scrupulous in separating what could be known by natural reason from what could be known only as an article of faith. It was an article of faith, for example, that the universe had a beginning.[62] Most importantly, perhaps, natural philosophy might be able to show that a skeletal God exists, for example, as the first and uncaused cause, but to believe in the Trinity is an article of faith. The Incarnation presents a mystery—for many reasons, but one of the reasons is that in it, a completely simple God enters into composition with matter.

Articles of faith involve mysteries, a word that needs further elaboration. Mystery novels, if they are any good, are not truly mysteries, because they can be solved by the application, as Hercule Poirot would say, of "the little gray cells."[63] In contrast, a theological mystery is doctrine that defies explanation.[64] The word is derived from μυστήριον (mysterion), denoting that it awaits disclosure, but has not yet been disclosed. In the Catechism of the Catholic Church (1997), the Latin term is mysterium fidei (mystery of faith), indicating that it is not knowable unless specially revealed by God, i.e., supernatural, above and beyond nature itself.

This point leads to a debate about whether there can be such a thing as the "supernatural". When a physician is confronted with a seemingly miraculous cure (from widely metastatic cancer, for example), the debate will be whether such a cure is truly miraculous—occurring because of the direct intervention of God in the world—or merely very rare. There is a

62 When theologians and scientists use the word "creation," they do not necessarily mean the same thing. The Big Bang is "creation" for most physicists. A Thomistic theologian can believe that the Big Bang occurred, but would not call it "creation," since, if there was a Big Bang, *something* must have existed in order to bang. For Thomas, creation was *ex nihilo*, from nothing, of which a human intellect cannot possibly conceive. As Thomas wrote, "*Creatio non est mutatio*" (*Summa Theologiae* Ia q.45 a2); the Big Bang was a change, *mutatio*. See: William E. Carroll, "Creation and the Foundations of Evolution," *Angelicum* 87, no.1 (2010): 45-60.

63 I've always been troubled by M. Poirot's *bon mot*. The cells are not gray; the brain tissue, macroscopically and in aggregate, is gray (sort of).

64 Different religious traditions use the word somewhat differently. These comments refer mainly to the usage within the Catholic church.

difference: the difference is that a theist might see limits to nature, which only God transcends, whereas as a skeptic (not to fuss a lot about the right word) will see our ignorance about what is truly included in nature. Perhaps, the skeptic might say of a patient suddenly relieved of widely metastatic cancer, there was an anti-cancer immunological phenomenon that we didn't know about, in the current, primitive state of our science. We modern scientists look down our noses at the science of the medievals and ancients, but it might be that in the centuries to come, we will suffer the same fate. So it is entirely possible that what some of us take to be a miracle would someday be explained in fairly ordinary, naturalistic terms. If that occurs, the so-called miracle might not be a miracle at all.[65]

But this, valid as it is, is beside the point. It is true that much of science proceeds by falsification, as Karl Popper proposed. Hypotheses are proposed and tested, and can be rejected if they are shown to be false; larger constructs, referred to as theories, can also be rejected under a weight of contrary evidence. Sometimes, as Thomas Kuhn wrote about Ptolemaic astronomy, for example, a theory is rejected not because it has been shown definitively to be incorrect, but because it has so many special cases that it becomes too cumbersome to use. An extreme Kuhnian might draw an implication that might or might not be valid: theories are devised while trying to solve pressing problems of the moment, but no theory is ever simply true and correct, for now and forever.

But again, these points, however valid, are beside the point. The point is that no scientist would ever spend countless hours pipetting were there not the prospect of Truth at the end of the tunnel. In other words, it would be pointless to do science—and here, we can extend the term to mean scientia in its broadest sense—without some belief that Truth exists. Or perhaps not belief, but only hope. There is an implicit article of faith in even the most skeptical science—and this is a belief, or perhaps only a hope, that the transcendentals exist. To say this may be only a *reductio ad absurdum* of a contrary position, but perhaps this is enough to keep doing science.

65 Or would it? There is an argument to be made that even the very "ordinary" laws of physics are a kind of miracle.

Brendan Sammon began his essay for this conference with a well-known Biblical quotation, John 14:6, "I am the Way, the Truth, and the Life." It is not obvious what Jesus meant when he identified himself in this way. In my conference essay, I noted that we flail about whenever we try to define words like "life" or "health." Attempting to define these words is an exercise in futility because we always end up with circularity in one of its many guises. Sometimes we define opposites in terms of one another—for example, health as the absence of disease, and disease as the loss of health. We similarly oppose life and death. Thus, the living are not dead, and the dead are devoid of life.[66] Or, when trying to define "life" or "health," one resorts to synonyms, examples, and characteristics. These, however, are also forms of circularity.

Yet, as Brendan Sammon also wrote, glossing the Biblical quotation, "*that which cannot be explained can still be storied*." As he noted, "The word explain comes from two Latin roots: 'ex,' meaning "out" and 'planus' meaning 'to flatten'. So, etymologically the word 'explain' means 'to flatten out.'" But stories can add weight to discourse by being less flattening: stories sometimes say more by explaining less.

Although one might not think of scientists as telling stories, it is a commonplace to tell graduate students, trying to publish their first scientific paper, that it is important to "tell a story." In other words, the data are whatever they are, but to talk to other scientists, it is important to say what you think the data mean. It might be the case that when a particular quantity of phosphorus is burned, it has combined with another, particular quantity of air to produce acid spirit of phosphorus; and that in this reaction, the phosphorus increases in weight upon burning. But it is a *story* to say that this is "what is observed in the *combustion*" of phosphorus—and that this process even has something to do with what mice and human beings also do when they/we extract energy from food by *oxidation*. Lavoisier told this particular story; but in calling this a "story," I am not saying that this is therefore untrue. Quite the contrary, in fact.

66 Operationally, physicians need to make decisions based on such contraries, based on empirical data – even without purely *a priori* definitions of "health" and "disease".

We should consider something that Thomas Aquinas said about the particular Biblical quotation given above. As an article of faith, one can believe it—or not; but what I want to note is its *consonance* with the biological sciences. After noting that Jesus started with the "way," Thomas proceeded to write:

> Because this way is not separated from its destination but united to it, he adds, and the truth, and the life. So Christ is at once both the way and the destination. He is the way by reason of his human nature, and the destination because of his divinity. Therefore, as human, he says, I am the way; as God, he adds, and the truth, and the life. These last two appropriately indicate the destination of the way. For the destination of this way is the end of human desire. Now human beings especially desire two things: first, a knowledge of the truth, and this is characteristic of them; secondly, that they continue to exist, and this is common to all things.[67]

As Thomas said in this passage and many others, we come *from* God as our cause, but this includes our final cause; and our final cause, our end or *telos*, *why* we were created, is to *return to God*.

In his *Summa Theologica*, he also noted a commonality in all of life: "For it is clear that we trace a thing back to that in which we find it first: just as in this lower world we attribute life to the vegetative soul, because therein we find the first trace of life."[68] One can object to the term "lower

67 Thomas Aquinas, *Commentary on The Gospel of St. John*, trans. James A. Weisheipl, O.P. (Albany, NY: Magi Books, Inc., 1998), Ch. 15, Lec. 2, 1868, https://isidore.co/aquinas/english/SSJohn.htm. Sed quia ista via non est distans a termino, sed coniuncta, addit veritas et vita; et sic ipse simul est via, et terminus. Via quidem secundum humanitatem, terminus secundum divinitatem. Sic ergo secundum quod homo, dicit ego sum via; secundum quod Deus, addit veritas et vita. Per quae duo terminus huius viae convenienter designatur. Nam terminus huius viae finis est desiderii humani, homo autem duo praecipue desiderat: primo quidem veritatis cognitionem, quae est sibi propria; secundo sui esse continuationem, quod est commune omnibus rebus.

68 Thomas Aquinas, *Summa Theologica*, trans. Fathers of the English Dominican Province (1947), Ia, q.39 a8, isidore.co/aquinas/summa/FP/FP039.html#FPQ39OUTP1. Manifestum est enim quod illi attribuitur unumquodque, in quo primo invenitur, sicut omnia inferiora dicuntur vivere propter animam vegetabilem, in qua primo invenitur ratio vitae in istis inferioribus.

world" as partaking of an old, possible outdated view of the natural world as a *scala naturae*; and furthermore, Thomas, in the thirteenth century, had no idea of the microbial world, and therefore could not have commented on whether the term "vegetative soul" would apply to it. Nevertheless, biologists, if they can be said to study *life* or *living things*, acknowledge, even if only tacitly, that there is a unifying entity called "life".

Certainly in human beings there is a desire for "a knowledge of the truth," as Thomas said above, and as Aristotle said at the start of his *Metaphysics*. The human intellect may well be special, but it did not arise completely *de novo* in human beings. We do not know how far back in evolution intellect goes; it is possible, as Thomas Nagel has suggested in *Mind and Cosmos*, that it is as old as the created world. Or, if one wants to be more restrictive than Nagel, consider this quote from Mary Midgley, who is citing "a remarkable passage" in Darwin's *The Descent of Man* on the origin of morality:

> On Darwin's suggestion, the relation of the natural social motives to morality would be much like the relation of natural curiosity to mathematics and science, or the relation of natural wonder and admiration to art, or that of natural amusability to jokes. These natural motives do not of themselves create the arts and institutions that channel them. But they provide a certain appropriate motivational force that is necessary to create these channels, and they also determine, sometimes in surprising ways, the direction which that force will take.[69]

Midgley cited "*a* remarkable passage"[70] (my emphasis), but this idea permeates a great deal of Darwin's writings. Consider, for example, this passage from *The Descent of Man*:

> Animals manifestly enjoy excitement, and suffer from ennui, as may be seen with dogs, and…with monkeys. All animals feel WONDER, and many exhibit CURIOSITY. They sometimes suffer from this latter

69 Mary Midgley, *The Ethical Primate: Humans, Freedom, and Morality* (New York: Routledge, 1996), 136.

70 In *The Ethical Primate*, Midgley cites Charles Darwin, *The Descent of Man*, first published 1871, reprinted Princeton, Princeton University Press, 1981, Vol. 1, pt. 1, ch. 3.

> quality, as when the hunter plays antics and thus attracts them; I have witnessed this with deer, and so it is with the wary chamois, and with some kinds of wild-ducks.[71]

Darwin, as usual, proceeded to multiply the examples many fold. He was thorough.

As for the other thing that Thomas stated all human beings especially desire, he noted that human beings desire "that they continue to exist." He added, notably, not only that this is common to all *living* beings, but even that "this is common to all things." This is to say, perhaps, that all natural beings, even inanimate ones, tend to move towards their own perfection and actualization. But to confine the discussion, for now, to living beings, this would seem to be one of life's central features. As the brave article in Wikipedia put it—brave, because they actually undertook to write an article entitled "Life"—a defining feature in one popular definition of life is the drive towards reproduction. One can be almost pejorative about this, and speak of "selfish genes," but this propagation or reproduction certainly seems to be a drive of a sort, one that moves towards an end.

In distinguishing what we can know of God through natural reason from what we can know of God by faith, Thomas Aquinas holds that much of the latter occupies the same territory as the transcendentals: that which transcends the other nine categories of Aristotle, and, as Thomas wrote, pertains to being *per se*. But he did not necessarily list all of the transcendentals, any more than he listed everything that could be known by either natural reason or faith.

Thomas explicitly listed five transcendentals, but, as both Brendan Sammon and I mentioned in our essays, there was at least one additional candidate, beauty, that probably also belongs on the list. As Thomas wrote, "Beauty and goodness in a thing are identical fundamentally; for they are based upon the same thing, namely, the form; and consequently

71 Charles Darwin, "Chapter III: Comparison of the Mental Powers of Man and the Lower Animals," in *The Descent of Man*, produced by Sue Asscher and David Widger (1999), https://gutenberg.org/files/2300/2300-h/ 2300-h.htm#link2HCH0001.

goodness is praised as beauty."[72] In the spare, economical prose of his *Summa Theologica*, perhaps it was not necessary, and of course not possible, to say everything explicitly. Thus, in saying that goodness and beauty "are identical fundamentally," and that the Good is a transcendental, perhaps he omitted to say that beauty is also a transcendental.

In any case, we might forget that when Thomas Aquinas was writing, and even more so before that, questions such as "what are the transcendentals?" were actively and widely debated. Maybe it is time to restart this debate. I would like to add "life" and "health" to the list.

On one level, to do so is absurd and wrong. If a transcendental is a *universal* property of all being, then clearly "life" does not belong on the list, for there are inanimate objects. In a sense, biologists can analyze only that which is not alive. In a completely different context, D. H. Lawrence wrote in *Studies in Classic American Literature* about Edgar Allan Poe's "Ligeia":

> What [the narrator] wants to do with Ligeia is to analyze her, till he knows all her component parts, till he has got her all in his consciousness. She is some strange chemical salt which he must analyze out in the test-tubes of his brain… It is like the analysis of protoplasm. You can only analyze dead protoplasm, and know its constituents. It is a death-process.[73]

While this is a perceptive comment about Poe's short story, this is too grim a view of knowledge in general. Is it really the case, as he said elsewhere in the same essay, that "to *know* a living thing is to kill it"?[74] But on the mundane level of the everyday activities of a laboratory in the biological sciences, analysis (chemical analysis of a cell, for example) is destructive. Biology might study living things, and overall serve life, but in analyzing living beings it often treats them as not alive or renders them so.

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72 Thomas Aquinas, *Summa Theologica* Ia q.5 a.4, reply to Obj, 1. Pulchrum et bonum in subiecto quidem sunt idem, quia super eandem rem fundantur, scilicet super formam, et propter hoc, bonum laudatur ut pulchrum.

73 D.H. Lawrence, "Chapter 6: Edgar Allan Poe," in *Studies in Classic American Literature*, http://xroads.virginia.edu/~Hyper/LAWRENCE/dhlch06.htm.

74 D.H. Lawrence, "Chapter 6: Edgar Allan Poe."

In another sense, however, one might be able to add "life" to the list of transcendentals, because what matters is not necessarily an individual part, but the ensemble. A cell or an organ of our bodies is not alive by itself or *per se*; it is alive only by virtue of being joined to a whole living being. So too I would say of our world. There are parts in it that are not alive, but it is also the case that we inhabit a living planet, and this planet is part of a living universe.

Thus, to answer my own question: this is the sense in which even a biologist can believe in the existence of life.

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BRENDAN THOMAS SAMMON

Of the many insights that were brought to light by the scholars at this conference, the connection between life and language not only stood out, but was often repeated, though at times in subtle ways. Hans Urs von Balthasar once noted that all good theology demands attention to two fundamental foundations: history and metaphysics. Both bear a significant relation to language: metaphysics, when done well (it is, pace Heidegger, done in many and diverse ways after all) is a rendering of the "language of Being," as it were, into the various forms and symbols that language uses as a means of communication; history, though always necessarily done in partial ways given the limits of human perspective, can be understood as the emergence of what Being has already spoken. As both Charles Yang and Jonathan Tran so incisively articulated, life is nothing if not a "festival" of the linguistic.

The conference opened with Celia Deanne-Drummond's reflections on life and compassion. It is obvious to state that both "life" and "compassion" are words, that is, linguistic symbols whose phonemic content bring to attention phenomena that, in themselves, exceed the strict linguistic limits of their articulation. It is less obvious that this excess opens to a more primordial linguistic form whose intelligible content arrives, not from utterances only, but from a performance, or participation, in these phenomena. As I have learned well as a care-giver to a child with Down Syndrome, one may speak the language of compassion without ever saying a word. As this conference has illuminated, one may recognize the same dynamic with respect to life itself—life as language begins prior to its arrival in worded forms, yet remains profoundly linguistic.

Jonathan Lunine and Marie George discussed extra-terrestrial forms of intelligence (ETIs), generating, among other interesting ideas, a debate about whether there could be ETIs that would be completely incapable of communicating with us. When one considers the isomorphic relationship between language and being—as any effective metaphysics ought to do—it seems to verify the position against an absolute equivocation between any linguistic worlds. Insofar as Kant was right to recognize that time and space are the two fundamental intuitions of all thought, it would seem to follow that any ETI would still have to rely on the categorical

elements of temporal and spatial experience, whether interpreted in a Kantian or Aristotelian framework, in order to communicate at all. And if it is the case that all communication requires some appeal to the basic categorical forms—forms of being that are more particularized or restricted than being itself (quantity, quality, relation, habitus, time when, place where, etc.)—does it not also reveal a similar foundation for life?

In certain traditions of metaphysical thought, the transcendental properties of existence were considered to be those modes of being that, transcending the categories, were as extensive as Being itself differing only in how they were understood (secundum rationem, to use Scholastic language). They are transcendentals because they transcend all categories as participating in them, expressing something that follows upon every being. They are in many ways the very form of language itself before language becomes worded: a thing can only be "worded" insofar as

1) it is a "thing" that can be affirmed;
2) it is "one" in that it is not divided from itself;
3) it is "something" in that it is divided from every other being;
4) it is "good" as being an object desired or appetible;
5) it is "true" in that it is conformable to the soul's intellective power; and
6) it is "beautiful" in that desire for it can become cognitive in the first place. Might human intelligence, indeed might human life itself, be similar in content to something akin to the transcendentals?

Aquinas maintained that in the act of knowing, based upon the principle *cognitum est in cognoscente secundum modum cognoscentis* (the thing known is in the knower according to the mode of the knower) every act of human knowing is an act that overcomes an ontological disproportion between the human intellect and the thing known. When human beings know a thing, they in effect elevate that thing to a higher ontological status: from a mere thing in its putative neutral "thereness," to a "thing known" now taking on a new life in the mind of the knower. This framework, however, only applies to those knowable objects that are ontologically "below" the human intellect and so capable of undergoing a process of "abstraction" from a thing into a new "ideal-life-form" within the limits

of linguistic concepts and categories so essential to human thought. In contrast, the transcendental properties of being (thing, one, something, good, true, etc.) can only be known by participation. In other words, the human intellect is incapable of examining these phenomena from the observable perch that "abstraction" provides and so cannot know these as mere objects in the world. In part, this is why Stephen Meredith is right to point out the limits that all dictionary definitions of life will bear—no positive concept can capture the essence of life. Rather, the best we can do is define life, as we do with God, by saying what life is not, or by articulating it as the absence of those forces antithetical to life. Moreover, we can perform, or participate in, life to most effectively and intimately come to know it.

Anne Foerst and Noreen Herzfeld's fascinating reflections on artificial intelligence resonated in many ways with some of the implications of the categorical/transcendental distinction. For if it is the case that human beings can never finally duplicate human intelligence, it would seem to verify the idea that intelligence is much more like a transcendental property of being than a lesser knowable object. Dialectically, we come to a better understanding of human intelligence precisely by becoming more attentive to our own inabilities to master it. In similar ways, it is often the case that where the wording of language fails, something linguistically in excess is coming to light that requires submission rather than mastery. This is one reason that many of our shared beliefs are social, held together not by the clarity of an "objectivity" easily worded, but by what Peter Berger referred to as a "plausibility structure"—the contingent network of truth whose plausibility is largely dependent on our shared experiences of that truth. What new insights into intelligence and indeed into life itself might be achieved when examined through the framework of the plausibility structure?

Such a question was in part the focus of both Eric Turkheimer and Dylan Belton, who viewed life from psychological and sociological perspectives. For both the life of the psyche and the Umwelt, language becomes the bearer of living content. Language constitutes the sort of plausibility structure enabling a "psychic life" to emerge within the personal-centered nature of one's Umvelt. Indeed, both approaches seem to shed much light on the dependency of life upon language.

Insofar as this conference confirmed the indelible intimacy between life and language, it also confirmed the efficacy of an approach to life that stories it within the Christian tradition. As "the life" Christ identifies the "Word" that illuminates life's myriad intelligibilities. Christ does so in a way that not only requires diverse tellings of this story but that also enables one to see the Christ-form in the stories of other faith traditions—not, to be sure, in some Rahnerian "anonymous Christian" sense, which suffers from reducing Christ to a category imposed upon otherness, but in the sense of Christ as a transcendental: recognizing the Christ-form as a plenitude, or fullness of intelligibility, the Christian recognizes the need for other storying forms in their integrity (rather than as surrogate Christ-stories) to do justice to the Christ-fullness. Like Christ, life as language is a fullness that not only invites, but requires, diverse speakings to do it justice.

CLOSING ADDRESS

Folding up the questions at last

— MICHELLE M. FRANCL —
PROFESSOR OF CHEMISTRY, BRYN MAWR COLLEGE AND AN ADJUNCT SCHOLAR AT THE VATICAN OBSERVATORY

As I listened to the various talks and the discussions that followed them, the line that kept running through my head was from Psalm 8: "What is mankind that you should be mindful of them, human beings that you care for them?"[1] In many ways, this is the question that we have danced around and through and with over these last three days. Not just what is life, but what is human life?

What is life that *we* should be mindful of?

1 Psalm 8:4 NRSVCE

I'M HUNTING FOR the pearls that have grown not from the points where we are consonant with one another, but from the places where we do not agree, where a particle of sand or bit of shell provokes us to (perhaps) rework our thinking. In her essay, "A View from the Divide," poet and biologist Allison Hawthorne Deming suggests that the productive tension that results from science and poetry looking to each other for language, metaphor and myth depends on the very existence of such a divide, on poetry and science retaining their integrity.[2]

We have not sought here to collapse C. P. Snow's two cultures into a single monolith, but to embrace what we can find from traveling between the theological, scientific, philosophical spaces that we each inhabit. Or as Deming eloquently puts it, "much is to be gained when scientists raid the evocative techniques of literature and when poets raid the language and mythology of scientists."[3] For example, Stephen Meredith's use of the image of the two dogs and the observer who would know instantly which dog was alive and which not, taken from James Joyce, provided a memorable touchstone

What have we accomplished in these conversations across the various divides? We have in some sense been engaged in an exploration of intellectual origami. Consider the work of MIT-based artist Brian Chan, who folds paper into intricate representations of living creatures.[4] Using only the linear folds allowed by origami, he can bring hermit crabs and lizards and anime characters to live from a simple square of paper. We can see the map of the folds on the flat sheet of paper and the final creation, but we still may not be able to understand how we move from the literal explanation—the flattened out pattern—of the creature to the fully formed object.

While the divide is critical, I believe, we must also recognize that we are inhabiting a single space. It is not, to quote Deming again, that "[s]cientists are the cold-hearted dissectors of all that is beautiful" while "poets [are] the lunatic heirs to pagan forces."[5] We are all engaged with the same base

2 Alice H. Deming, "Science and Poetry: A View from the Divide," *Creative Nonfiction* 11, no. 11 (Fall 1998): 11–29.

3 Deming, "Science and Poetry," 16.

4 See web.mit.edu/chosetec/www/origami/.

5 Alice H. Deming, "Science and Poetry," 13.

material, beauty matters to scientists and poets engage with "pearl-necklace viruses, [and] winged protozoans."[6] The artist M.C. Escher has an etching of ants crawling on a Möbius strip. While the ants—and we—might think we are on opposite sides or exploring different spaces, there is but one side, one space, that we are moving on. This is a figure that resists explanations, that literally cannot be flattened out. We are dealing in mysteries, and mystery always serves to draw us deeper into the questions, both in faith and science.

While our goal in this conference was to tackle the question "what is life?" I want to remind us of Pope Francis's words in *Laudato Si'*: "our goal is not to amass information or to satisfy curiosity, but rather to become painfully aware, to dare to turn what is happening to the world in your own personal suffering and asked to discover what each of us can do about it."[7] The goal is not so much to create an explanation, to flatten all the dimensions into a single easily grasped plan, but to remain always cognizant of the implications of both the question and the answers that we sketch. These are key questions we are asking with consequences in the real world, not just in our laboratories and philosophical and theological spaces. There is a pastor who is advocating lining up LGBTQ people and shooting them in the head, because he does not consider them human. Iceland considers the lives of people with Down's Syndrome as not worth living. We ought to be painfully aware of the question in our work.

Writing about the breadth of God's Incarnation across the universe, theologian Paul Tillich notes "Incarnation is unique for the special group in which it happens, but it is not unique in the sense that other singular incarnations or other unique worlds are excluded. Man cannot claim to occupy the only possible place for incarnation."[8] While Tillich is addressing the possibility of multiple incarnations for extraterrestrials, there is an underlying call to respect the diversity of incarnation on this earth. As

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6 Marilyn Nelson Waniek, "Dusting," in *Magnificat* (Baton Rouge: Louisiana State University Press, 1994), 18.

7 Francis I, *Laudato Si'* [Enclyclical Letter on Care for Our Common Home], sec. 19, www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html.

8 Paul Tillich, *Systematic Theology*, vol. 2 (Chicago: University of Chicago Press, 1957), 95f.

Brendan Sammon pointed out, if we believe God dwells within us, then God dwells within us no matter what we are and how we came to be here.

I remind us that boundaries are softer than we think. In my own field of quantum mechanics you can show that if you drop a ball on a tabletop there is some possibility that the ball will penetrate into the tabletop. Perhaps more disquieting, if you drop the ball over the edge there is a non-zero possibility it will bounce back from a top that is not there. The math is clear, the phenomenon has been observed, but it suggests that in some circumstances edges are not as sharp nor as clear as we imagine them to be. As both Noreen Herzfeld and Anne Foerst reminded us, when we are unclear about the boundaries between humans and machines, not only can we treat machines as humans but we can treat humans as machines.

Noreen Herzfeld pointed us to St. Benedict's rule "regard all the vessels of the monastery and all its substance, as if they were sacred vessels of the altar."[9] We ought to resist the desire for firm answers and sharp boundaries when it comes to deciding what is a human life. I would argue that we should consider the space between life and not-life as a sacred space, a place to tread lightly. We ought to offer grace and mercy to the organisms sitting in these liminal spaces, handling them as if they were as sacred as our own lives.

Finally, I want to remind us that science is more than the rational, the objective, the observable. Metaphor is not simply an adjunct to science, burnishing her language and offering on-ramps for the non-specialist. These philosophical and theological endeavors are, I believe, fundamental to science, as they provide the burning embers that all the hard-won equations and experiments breathe into flame. Poet Simon Armitage points out that we don't go to the moon because of the cold, hard equations: we go because we are on fire to know the universe more intimately. In the end, love is what moves both physicists and philosophers and theologians.[10]

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9 St. Benedict of Nursia, *The Holy Rule of St. Benedict*, trans. Leonard J. Doyle (Collegeville, MN: Liturgical Press, 1948), Ch. 13.

10 Simon Armitage, "Modeling the Universe: Poetry, Science, and the Art of Metaphor," in *Contemporary Poetry and Contemporary Science*, ed. Robert Crawford (New York: Oxford Univ. Press, 2006).

I will close with a snippet from astrophysicist and poet Rebecca Elson's poem, "Antidotes to Fear of Death."

> I eat the stars.
> Those nights, lying on my back,
> I suck them from the quenching dark
> until they are all, all inside me, pepper hot and sharp.[11]

We have sucked in a lot of questions, and I hope that they will remain "pepper hot and sharp" as we continue our work.

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11 Rebecca Elson, "Antidotes to Fear of Death," in *A Responsibility to Awe* (Carcanet Classics, 2018), 61.

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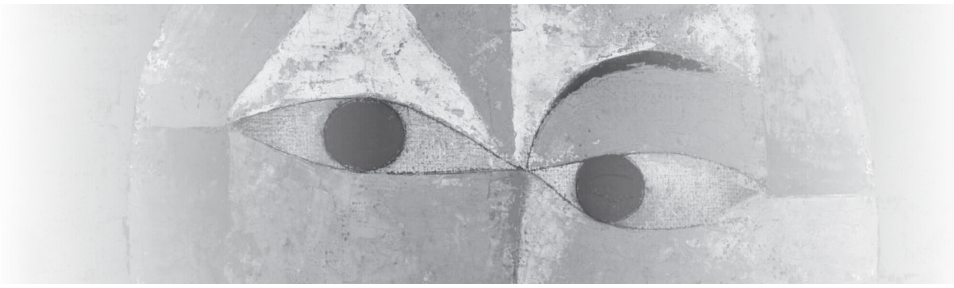

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THE MAGI PROJECT For Science & Theology

PRRUCS Program for Research on Religion and Urban Civil Society
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In this special issue of the PRRUCS Journal

— multidisciplinary collaborative discussions engaging the frontiers of science, reason, and faith reflect upon our understanding of life and our place in the universe — from the Magi Conference presented by Collegium Institute and Program for Research on Religion and Urban Civil Society, June 2022 in Philadelphia.

Dylan Belton — Mendel Postdoctoral Fellow, Department of Theology and Religious Studies, Villanova University

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Noreen Herzfeld — Professor of Science and Religion, Saint John's University and College of St. Benedict

Jonathan Lunine — Professor of Astronomy, Cornell University

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