

Paper Title: Why Are We Moral?

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Paper Abstract:

1. Moral cognition stands as the single behavioral puzzle for both science and theology. Its existence is crucial to a Christian theological doctrine of sin while its non-existence is equally crucial to the science of sociobiology. At stake is a description of the human species that satisfies both scientific inference and theological reflection. Modern studies in human evolution suggest that the notion of morality that drives altruistic behavior is itself a product of evolution. Orthodox Christian theology resists this claim and tends to interpret morality as a static characteristic of human nature that is hardwired into the mind so that moral cognition is understood as a key marker of what it means to be made *imago Dei*.
2. Christian theology identifies moral cognition, evidenced by altruism, as one of the unique features of the human race, providing support for a spiritual relationship with God. This, if true, appears to falsify a strict naturalistic interpretation of Darwin’s theory of biological evolution.
3. The sciences of sociobiology and evolutionary psychology attempt to show, by drawing analogies from studies of non-human societies, that moral cognition is illusory because what passes for altruism are actually survival strategies in different forms of group/kin selection and indirect adaptations. With the emergence of new brain imaging technologies, the new science of mind has added empirical support to the philosophy of biology for a purely naturalistic explanation of morality. Thus, molecular biology of cognition seeks to provide empirical evidence to undermine the veracity of morality.
4. Two questions arise: Does moral cognition exist, and if so, is it evolved? The natural sciences are incompetent to judge any metaphysical state of reality, but they are competent to judge on whether behavior appears to evolve.
5. I shall argue that moral cognition does indeed exist and it is evolved. This comes up against the problem of reconciling the evolution of morality with the doctrine of original sin and the ‘Fall.’ Is sin the result of a genetic or a cultural evolution? Following W. Mark Richardson, I shall call for a revisioning of the biblical story of the fall as the origin rather than the consequence of sin and seek a theistic evolutionary model of morality that comports with the Bible while finding convergence with the natural sciences.

Author Biography:

The Rev. Mr. Ron Choong, an ordained Presbyterian minister, founded the Academy for Christian Thought (ACT) in 2002. He read English law, the natural sciences, international relations, the humanities, and theology in Great Britain and the United States. He has served as

an evangelist in New York since 1990. He writes on and teaches courses in theology, science, history, and philosophy in New York with ACT. He also conducts a summer preaching and teaching ministry in Asia. Ron's current research interests include the emergence of human intelligence and moral and religious cognition.

He received his law degree (LLB Hons) from the University of London in the same year that he graduated from the British Open University with a B.A. in science and economics. After serving chambers in international law, he began service as a missionary evangelist to international students in New York with Int. Students, Inc. In 1996, he attended Princeton Theological Seminary where he graduated with a M.Div. in 1999 and a Th.M. (philosophical theology) in 2000. Then he embarked simultaneously on an S.T.M. at Yale in Islamic and Medieval Philosophy and a Ph.D. at Princeton Seminary in Science and Theology under the direction of Wentzel van Huyssteen. He completed his S.T.M. in 2004 and is on his last legs with the Ph.D. In 2002, Ron incorporated ACT as an independent research and training resource for Christian apologetics with reference to science, philosophy, and world religions.

Paper Text:

Understanding consciousness is the most challenging task confronting science today. It is at the core of our being and existence. How can a biological system think about itself? An unconscious person may be alive, but to all intents and purposes, and most importantly, to himself, he does not exist. While philosophers have offered many potential explanations, there has been only modest progress towards understanding a biological basis for consciousness.¹ Using our conscious cognitive facility to study itself is doomed to suffer the criticism of, more than anything else, a lack of perspective. Still, the exploration goes on, if only because our very conscious self is also a curious self, and the need to know is, as Aristotle said in *Metaphysics*, a mark of mankind.

What makes human consciousness distinct from all others is an awareness of being aware (self-consciousness), which leads to moral awareness. To no other life form do we attribute the demand for justice. We may dearly love animals but do not expect them to be morally aware. Indeed, we append the otherwise innocuous term ‘animal’ to a human being who does not live up to our moral standards expected of humans. The highest compliment we offer an animal is to declare that it is “almost human.”

A theological notion of consciousness that takes science seriously may be “mental states that are higher level emergent properties of the brain” for which its “activity supervenes on neural activity without violating physiological laws”.² While this view, championed by Roger Sperry, Philip Clayton and Ian Barbour may not satisfy everyone, it demonstrates the importance of maintaining the disciplinary integrity in a true interdisciplinary dialogue.

Sociobiology and evolutionary psychology suggest that our brains evolved a mind that optimally adapted to environmental and cultural (nature & nurture) conditions that maximized the advantage of gene replication for posterity. Cognitive Neuroscientist Michael Gazzaniga claims that we are moral because morality evolved to help humans cope with uncertainty (a Feuerbachian/Freudian remake). It served as a social glue but is now no longer necessary. In fact religiosity itself may have an organic basis within the brain.³ He suggests that temporal lobe epilepsy (TLE) and its concomitant *Geschwind* syndrome (hypergraphia, hyperreligiosity, aggression, stickiness, and altered sexuality) were the likely causes of religiosity. He goes on to suggest that every religious leader from Moses to the Buddha to Saint Paul may have suffered from such brain lesions. While this does not mean that all religious people undergo seizures, it does minimize any claim as to the veracity of religion.⁴ The tricky bit of course, is to substantiate claims of historical medical diagnoses, such as the claim that the apostle Paul experiencing a seizure on the road to Damascus – this apparently accounts for his claim to weakness in his letter to the Corinthian church.⁵ Of course, the anecdotal natures of such reports undermine their claims for scientific credibility. Furthermore, first person accounts are notoriously unreliable and especially so when the assumption is made that the brain is a belief-formatting machine. How

¹ Christof Koch, *The Quest for Consciousness: A Neurobiological Approach*, (Englewood, CO: Roberts and Co. 2004), 303.

² Martinez J. Hewlett, “DNA, Darwin and Doxology: A Contemporary Conversation between Biology and Faith” in Russell, Robert John, Ed., *Fifty Years in Science and Religion: Ian G. Barbour and his Legacy*, (Aldershot, Hants: Ashgate, 2004), 188.

³ Michael Gazzaniga, *The Ethical Brain*, (New York: Dana Press, 2005), 158.

⁴ Gazzaniga, *The Ethical Brain*, 156ff.

⁵ Gazzaniga, *The Ethical Brain*, 158.

can we trust the first person accounts of subjects under scientific observation unless we form a belief that in such instances, their description of what they experience is truthful, reliable and accurately transmissible. Gazzaniga candidly reminds his readers that whether or not you accept his view that all religious teaching are merely stories from the ignorance of the ancient past, we should know that this is precisely what “what every modern-day secular university is teaching, either implicitly or explicitly.”⁶ He, like Daniel Dennett, Steven Pinker and Richard Dawkins, wishes to preserve the moral order but abandon the religious sources from which they arise, in the name of science. This is justified by his call to acknowledge that the human condition possesses an innate moral sense (IMS), akin to Steven Pinker’s language acquisition device (LAD). The IMS shapes our rationality so that we resist any urge to kill, not because some religious teacher says so, but because, in Gazzaniga’s words, “it is not a good idea to kill”.⁷ What defines the term ‘good’ for him is ultimately some Kantian categorical imperative or worse, an example of hijacking a term only to deprive it of its essential meaning. Shed of its religious and theological connotation, morality is merely a social consensus robbed of its history. However, the existence of altruism (not kin selection or adaptive altruism) exposes a flaw in the explanation. Morality and freedom of will are obstacles to a purely biological explanation.

Christian theology teaches that we are moral because we were formed in the image of God, the moral lawgiver, and charged to meet the moral demand. We are unable to do so unassisted and dwell in a state of sin. Jesus provides the means for us to meet the demand and close the moral gap.

Can the epistemic gap between the scientific and the theological explanations be bridged? While the two domains of human inquiry are different, convergence may be found in a postfoundational approach in which different layers of reality are acknowledged. I shall argue that increasing complexity for cognition and mobility in evolutionary history are accompanied by greater capacity for pain. The function of pain receptors as warning signals also lead to the capacity for judgment to avoid excessive exposure to suffering. The response to avoid pain by seeking personal advantage is achieved by the emergence of emotions. Thus judgment finds expression in acts of the free will. But volition is only free insofar as it can make alternate choices, and true alternatives lead to counter-intuitive, even counter-productive ends. It is just such untoward ends that serve to draw our attention to the existence of some moral order. In humans, emotional intelligence served as a precondition for moral cognition. This is where biology hits a philosophical brick wall.

Why is moral cognition necessary? Advances in cognitive neuroscience cannot explain why we make decisions that are subject to moral judgments. To account for freedom of will, there must exist real morality. Morality functions only when judgment can be made and this requires emotional intelligence. This backward move from free will to emotions can be explained theologically: God loves us, so God gave us free will and the capacity to love God back. Freedom bears the power of rejection. We possess moral cognition, expressed as emotions, to make just such judgments. Let us begin with a brief history of how the mind came to be understood as a subject of study by studying the brain.

⁶ Gazzaniga, *The Ethical Brain*, 164.

⁷ Gazzaniga, *The Ethical Brain*, 166.

1. A Brief History of the New Science of Mind

In *Search for Memory: The Emergence of a New Science of Mind*, Eric Kandel, who won the Nobel Prize for his work on memory storage in the brain, introduces the new science of mind based on five principles:⁸ (i) mind and brain are inseparable (ii) each mental function of the brain is carried out by specialized neural circuits in different regions of the brain (iii) all these circuits are made up of elementary signaling units called nerve cells (iv) the neural circuits use specific molecules to generate signals within and between nerve cells, and (v) these specific signaling molecules have been conserved through millions of years of evolution.

Kandel traced the syntheses of scientific disciplines over the past fifty years from which emerged the biology of mind. Three disparate ideas, Darwinian evolution, genetics and cell biology, were united by the field of molecular biology, which focused on the action of genes and proteins in individual cells. The gene was recognized as the unit of heredity and the driving force of evolutionary change and proteins, the product of genes, as the elements of cellular function. Molecular biology reveals what all life forms have in common. In the 1960s, philosophy of mind, behavioral psychology (simple behavior of experimental animals) and cognitive psychology (complex mental phenomena in humans) merged to become the modern cognitive psychology (all mental phenomena in all animal and human life). In the 1970s, the science of mind, cognitive psychology merged with the science of brain, neuroscience to give rise to cognitive neuroscience, a discipline that introduced biological methods of exploring mental processes into modern cognitive psychology. In the 1980s, brain-imaging technology enabled cognitive neuroscientists to realize their dream of watching live activity of a thinking brain. Brain imaging measures indices of neural activity: positron-emission tomography (PET) measures the brain's consumption of energy, and function magnetic resonance imaging (fMRI) measures its use of oxygen. When cognitive neuroscience incorporated molecular biology, in a new science of mind emerged – a **molecular biology of cognition**. This allows us to explore such mental processes as how we think, feel, learn and remember, on the molecular level.⁹

In extending Darwin's idea, this science of mind suggests that consciousness of the self, the highest mental process, and indeed what some may argue, even the notion of the human soul, evolved from our animal ancestors. Kandel is interested in how memory sustains (we cannot say if it creates) personality by allowing the brain to create consciousness of a unique, unified self and a sense of free will. But our current knowledge of how consciousness works is woefully modest.

Another neuroscientist, Joseph LeDoux, seeks to understand the self by asking how our brains make us who we are? By this he means that our personalities are created and maintained by our brains through synaptic encoding. Synapses are gaps between brain cells called neurons, through which chemical neurotransmitters traverse between a terminal and a dendrite by what is called synaptic transmission. In *Synaptic Self*, LeDoux explains his synaptic theory of personality by stating that synapses are channels through which we think, act, imagine, feel and remember how to encode our traits, preferences and beliefs. Synapses allow us to function as a single integrated individual – a synaptic self, from moment to moment. Challenging the view that self-awareness alone marks the self, he emphasizes the importance of unconscious processes and the

⁸ Eric R. Kandel, *In Search of Memory: The Emergence of a New Science of Mind*, (New York: W. W. Norton, 2006), xii. He refers to it not as science of the mind by of mind to draw attention to the non-localized nature of mental circuitry.

⁹ Kandel, *In Search of Memory*, 7-8.

role of memory (the synaptic storage of information) in maintaining personality over time. At the synaptic level, memory joins genes to create personality.

Since brain systems are plastic (modifiable), nurture plays an important role alongside nature. This permits learning.¹⁰ Memory plus learning makes for a viable personality. What of the mind? According to LeDoux, the mind consists of cognition, emotion and motivation.¹¹ The chemical and electrical impulses in brain circuitry function with the maintenance of action potential throughout the length of the circuits. Projection neurons release the amino acid neurotransmitter glutamate while inhibitor neurons release GABA (gamma aminobutyric acid) to strike the right balance.¹² These fast acting but short lasting transmitters are accompanied by slower acting but longer lasting transmitters called modulators.¹³ They include peptides, amines and hormones, which serve as inhibitors. Together, these chemicals work a complex dance to maintain chemical balance in response to rapid changes of environmental factors.

The work of Kandel and LeDoux can mislead us into thinking that a naturalistic account of the mind is forthcoming. But both men know that this is not the case. The problem is the persistence of altruism and the moral order, independent of scientific explanations.

2. Does Morality Exist?

The irony of sociobiology & evolutionary psychology: what biological evolutionists have carefully avoided – ‘purpose’, has now been smuggled in. The memic character of the selfish gene has been identified as teleological.

The idea of morality is the biggest stumbling block to sociobiology (it does not exist) & the most important claim in Christian theology (it exists).

Standard treatments in scientific studies tend to explain moral choices as sociobiological survival strategies, in part, due to the methodological naturalism that scientific investigation entails. Sociobiologically driven philosophy argues that we are moral because selective pressures in biological and cultural evolution make advantageous adaptations to support survival strategies that appear to be ‘moral,’ that is, seeking the good over the bad. Evolutionary epistemology and sociobiology claims that the mechanics (not the telos) of the evolution of ethics suggests that we are moral because it turns out to be the best collective survival strategy for humans. In *Consilience*, E. O. Wilson considers ethics from a sociobiological perspective. He distinguishes between ‘trancendentalists’ (who appeal to God as the basis for moral objectivism) from ‘empiricists’ like himself (who believe that moral values come from humans alone). For Wilson, ethics must be grounded in a sociobiologically informed account of human nature, which is itself merely a synthesis of genetic predispositions altered by cultural norms, both of which are products of evolution.¹⁴

Even critics of sociobiology such as Philip Kitcher and Steven Rose are quick to judge that mental and conscious processes are evolved with functionally-adaptive properties essential for survival, making a materialistic argument that denies rather than remains agnostic about, the

¹⁰ Joseph LeDoux, *Synaptic Self: How Our Brains Become Who We Are*, (New York: Viking, 2002), 9.

¹¹ LeDoux, *Synaptic Self*, 24.

¹² LeDoux, *Synaptic Self*, 53.

¹³ LeDoux, *Synaptic Self*, 57.

¹⁴ Craig A. Boyd, “Thomistic Natural Law and the Limits of Evolutionary Psychology” in Philip Clayton and Jeffrey Schloss. Eds., *Evolution and Ethics: Human Morality in Biological and Religious Perspective*, (Grand Rapids: Eerdmans, 2004), 221.

possibility of a metaphysical origin.¹⁵ What makes them so certain? I think it has to do with the insecurity of facing the natural limits of scientific investigation. Another factor may be the fear that hard won scientific credibility in the public imagination may be lost to religious fanatics whose assertions cannot be verified or falsified. Despite their naturalism, Hilary and Steven Rose criticizes what they call *Flintstone psychology*, the dubious method of constructing models of hunter-gatherer societies with little empirical evidence and then using it as the foundation from which to explain the present.¹⁶ Their critique is based on the scarcity of admissible evidence for what life was like for the hunter-gatherers and how such a speculation can be used as the basis for extrapolating how societies function today. Be that as it may, we ask the question, if a naturalistic account of the evolution of morality fails, will a theistic account of the evolution of morality succeed? Before we consider that, let us summarize the archeological theory that best suggests how our minds came to be what it is today.

3. Evolution of the Mind for Belief-formation: Cognitive Fluidity & Language

How did our biological brain come to believe? Metaphysical belief requires articulation of knowledge, which in turn requires the symbolic language we call speech. Thus language is the key to sophisticated belief-formation. Paleoanthropology helps us understand how it may have been possible for the human brain to evolve so differently from non-human brains as to express itself as a kind of mind that speaks and understands speech.

Humans are highly social animals. This makes a demand for a high degree of sophisticated signaling. The kind of communication that human language permits is unique in the animal kingdom. Its capacity is essentially infinite. There is no obvious limit to the type of meaningful sentences that can be constructed. It is almost inconceivable that the human mind and human language can exist independent of each other. The question of which came first, the human mind capable of developing symbolic language, or a symbolic language capable of developing the mind, may be answered by Terrence Deacon.¹⁷ Deacon makes the case for a coevolution of language and brain during the period 500,000 – 200,000 years ago, when a great expansion of brain size may have taken place. Dismissing Noam Chomsky's pre-ordained universal grammar and Steven Pinker's LAD (language acquisition device), Deacon suggests that language and symbolic representation developed *pari pasu* with culture and social organization. This would have been the most efficient way of ensuring understanding between members of the same group. Language evolved to fit comfortably with pre-existing brain mechanisms and the brain evolved to accommodate new linguistic potentials. But what if the brains function as modular minds?

According to paleoanthropologist and archeologist Steven Mithen, the evolution of the human brain reached a turning point some 60 tya when the human mind might have attained what he calls 'cognitive fluidity', a phase in its development which coincides with an almost limitless capacity for imagination.¹⁸ Mithen points out that even if non-human minds were

¹⁵ Steven Rose, *The Future of the Brain: The Promise and Perils of Tomorrow's Neuroscience*, (Oxford: Oxford University Press, 2005), 88.

¹⁶ Rose, *The Future of the Brain*, 99.

¹⁷ Terrence Deacon, *The Symbolic Species: The Co-evolution of Language and the Brain*, (New York: Norton, 1997)

¹⁸ Steven Mithen, *The Pre-History of the Mind: The Cognitive Origins of Art, Religion and Science*, (London: Thames and Hudson, 1996), 71.

strictly modular, the appearance of language demodularises the mind.¹⁹ In his theory of cognitive fluidity, the characteristic of human mentality is the ability to integrate. Rather than the Swiss-Army knife model (advanced by Tooby and Cosmides), the brain functions like a general-purpose computer.²⁰

Symbolic language demands intersubjectivity. Unlike mere signals that send instructions to guide behavior, symbols guides understanding. Symbols can also transcend time and geography, not being limited to the immediate. We may well ask, what are the necessary requirements for the possibility of symbolic language as human speech?

Drawing from Deacon, Steven Rose conveniently categorizes them as mechanistic and cognitive. Mechanically, relevant muscular and neural control over vocalization, the larynx, the mouth and tongue are needed to enable articulation of distinct sounds. Vocalization is dependent on midbrain structures in communication with the amygdala and hippocampus, a region known as the periaqueductal grey. Deacon believes it has to do with progress in hominid evolution. But why can't chimpanzees speak? Primatologist Sue Savage Rumbaugh believes it is a mechanical limitation. The vertical position of the human head above the spinal column makes our vocal tract curve downwards at a 90° angle at the point where the oral and pharyngeal cavities meet. In the ape vocal tract, it slopes gently. The human larynx and tongue are lower and the nasal cavity can be closed off, enabling the possibility of lower pitched vowel-like sounds.²¹ Cognitively, linguistic communication requires the ability to use vocalizations to symbolize objects, processes, attributes, etc., a way of using speech to communicate in language. It also relies on the listeners to understand by categorizing and computing the symbols and sounds. What is needed is a shared understanding of referents in the external world, so that perceptions of reality are understood as if a universal template of meaning exists in every human mind. This is possible because the human brain is asymmetric: the left hemispheric regions known as Broca's area and Wernicke's area (of vital importance for the generation of coherent speech) are noticeably larger than their corresponding right hemisphere regions. However, such asymmetry is also true for chimp brains. Rose thinks that structure alone does not guarantee speech. The key must lie in regulatory mechanisms. Having the right genes and phenotype is not enough. Developmental biology ultimately determines whether the cognitive functions can reach their full potential.²²

This is strongly argued in Kim Sterelny's *Thought in a Hostile World*, where he speaks of the dual inheritance channels in hominid evolution, one through genes and the other, through social learning, with its mechanism for rapid evolutionary change, including imitation and mimicry. Oblique transmission in social groups accelerates the spread of adaptation. The hominid lineage may be unique because it exemplifies the developmental integration of a set of inheritance channels "that has expanded the space of hominid evolutionary possibilities." If there are important information-load constraints on genetic inheritance,²³ dual inheritance may circumvent them.²⁴

¹⁹ Rose, *The Future of the Brain*, 112.

²⁰ Rose, *The Future of the Brain*, 101.

²¹ Rose, *The Future of the Brain*, 107. See Sue Savage-Rumbaugh, S. G. Shanker and T. J. Taylor, *Apes, Language and the Human Mind*, (Oxford: Oxford University Press, 1998).

²² Rose, *The Future of the Brain*, 108.

²³ Kim Sterelny, *Thought in a Hostile World: The Evolution of Human Cognition*, (Oxford; Blackwell, 2003), 240. Mark Ridley speculates that information limits on genetic inheritance may constrain evolvability in animal lineages since the reliability of error correction mechanisms limit the amount of

Belief-formation by the human mind was made possible with the emergence of symbolic language and the physical capacity for speech by which to articulate and signal our agreement. But how was there sufficient time for genetic evolution to reach this level of sophistication? While Sterelny concludes that the power of oblique transmission in cultural inheritance can permit the rapid advances necessary for social learning to transcend information-load constraints, what has not been solved is the problem of universal intelligibility. How did all hominids who participated in this cultural evolution of language synchronize their social learning to come up with universal referents for symbolic meanings? This is possibly beyond the scope of even archeological research because we are not dealing with physical remnants to study but inferring from social interactions of long dead hominids.

This dead-end brings us to the resource that theology has to offer. But does a Darwinian account of evolution not deny a theistic view of morality? In theory yes, but Richard Dawkins, one of the most ardent fans of classical Darwinism today, whatever his rhetoric, in fact makes it possible and even plausible to build a case for a theistic evolution of morality.

4. Toward A Theistic Evolution Of Morality?

Philosopher of biology Philip Kitcher writes that while the orthodox story of Darwinian natural selection refers to the average fitness of the organism, Richard Dawkins offers an alternate story, one in which the unit of selection is the gene. Biological evolution under natural selection is thus a process by which the average ability of the genes in the gene pool to leave copies of themselves increases with time. The key to understanding Dawkins is making sense of his terminology. Genes are replicators (entities that can be copied) and selection is the struggle among active germline replicators (with the potential to leave infinitely many descendants). In the history of life, coalitions of replicators began to construct vehicles through which they spread copies of themselves. Better replicators build better vehicles, and hence are copied more frequently. We are one such type of vehicle. While Darwin's story focuses on the vehicle, Dawkins claims to have identified the underlying struggle among replicators.²⁵ It is as if natural selection describes the battle of genes housed in organisms much like the Martian aliens who attempt to take over the Earth in their war machines in the Tom Cruise movie adaptation of H. G. Wells' *The War of the Worlds*. Dawkins' hypothesis of genic selectionism fails to account for genic interactions epigenetic constraints. Dawkins was led to his view by the dubious definition of the organism. Can we really consider the colony of cellular life forms "a dog", or "a man" in the same way that we speak of "a tree"? Even among such organisms, economic reactions to the scarcity of nutrients result in different survival strategies. As Dawkins puts it in characteristic lucidity, "Starvation does not change the number of legs, hearts or livers of an animal but the effect of stress on a plant is to alter both the rate of formation of new leaves and the rate of death of old ones."²⁶ Yet it is easy for Dawkins to slide into naïve adaptationism and overcredit individual alleles with powers to operate independently of their vehicles. Such has never been observed and constitutes risky biological inference.

information that can flow between generations. The more information transmitted, the greater the probability that the signal will be corrupted by too much error.

²⁴ Sterelny, *Thought in a Hostile World*, 240.

²⁵ Philip Kitcher and Kim Sterelny, "The Return of the Gene" [1993] in Philip Kitcher, *In Mendel's Mirror: Philosophical Reflections on Biology*, (Oxford: Oxford University Press, 2003), 94.

²⁶ Richard Dawkins, *The Extended Phenotype: The Long Reach of the Gene*, (Oxford: Oxford University Press, 1999), 253.

Kitcher and Sterelny offer a corrective that fully recognizes the possible constraints of gene-environment co-evolution. They attempt to rehabilitate Dawkins by pointing to his response to his critics. Dawkins acknowledged that despite life consisting of replicators with their extended phenotypic tools of survival, they have chosen to group themselves by the billions to form organisms. He draws from H. A. Simon's *The Architecture of Complexity*, which explains the functional advantage of organization into nested hierarchies of repeated subunits. The evolution of statistically improbable assemblies proceeds more rapidly if there is a succession of intermediate stable sub-assemblies – such as genes within cells within organisms.²⁷ Kitcher and Sterelny conclude that even for Dawkins, “the return of the gene should not mean the exile of the organism,”²⁸ i.e., we can be more than our genes.

Robert Wright puts it this way; the product of natural selection is not unchangeable. It does mean that any change comes at a cost – it is called self-discipline. That something is ‘natural’ does not entail that it is good, or that we ought to adopt its values.²⁹

This is also the view of Dawkins himself, but the din caused by his deliberate use of poetic words to describe biology has brought him heaps of criticism for sins he did not commit. However, even as Dawkins points out that he has been misunderstood, his continued use of terms such as ‘selfish’ gene adds to the pandemonium. In a non-moral world, the term selfish merely means that it pertains to the self, with no connotation for preferentialism. In a world charged with moral cognition, the word ‘selfish’ reads like intentional preferentialism. Dawkins’ gene selectionism, a way of talking about evolution, is often mistaken for gene determinism, a way of talking about development.³⁰ His notion of the genic extended phenotype does not undermine the role of the organism in biological evolution. His point is that nature selects genes for optimal procreation, but humans ought to resist any predictably immoral consequences by the act of free will. It may come as a surprise to some critics of Dawkins that he is in fact calling for moral action³¹ but wishes a morality unencumbered by institutionalized religion. He writes,

“I am not advocating a morality based on evolution. I am saying how things have evolved. I am not saying how we humans morally ought to behave ... My own feeling is that a human society based simply on the gene’s law of universal ruthless selfishness would be a very nasty society in which to live. ... Let us try to teach generosity and altruism, because we are born selfish. Let us understand what our own selfish genes are up to, because we may then at least have the chance to upset their designs, something that no other species has ever aspired to.”³²

We have to read this to mean that whenever Dawkins writes of the inevitability of gene selectionism, he writes descriptively and not prescriptively. For even this most extreme of classical Darwinists appeals to altruism within a moral order, but one in no need of God.

²⁷ Dawkins, *The Extended Phenotype*, 251ff.

²⁸ Kitcher and Sterelny, “The Return of the Gene”, 109.

²⁹ Robert Wright, *The Moral Animal: Why We Are the Way We Are: The New Science of Evolutionary Psychology*, (New York: Vintage Books, 1994), 31.

³⁰ Dawkins, *The Extended Phenotype*, 18.

³¹ Richard Dawkins, *The Selfish Gene*, (Oxford: Oxford University Press, 1989, [1976]), 2ff.

³² Dawkins, *The Selfish Gene*, 3.

In summary, we may say that whatever else Dawkins is guilty of (usually plain rudeness and insensitivity), he is not guilty of endorsing crass immorality. Dawkins begins *The Selfish Gene* with a call to altruism to overcome our selfish tendencies. This sounds so much like Scotus' rendering of our affection for personal advantage that it is tempting to see the convergence and ponder Dawkins' smuggling of ethical theory into a popular science book. Dawkins effectively says that it is possible for us (phenotypical vehicles of selfish genes) to operate altruistically. In this, he is no strict gene deterministic sociobiologist. Let us now look at how a theologian might explain Dawkins' call to morality.

Theologian **Ted Peters** asks, how can selfishness in the genotype operate with altruism in the phenotype?³³ Sociobiologists argue that altruism does not exist. The apparent altruistic behaviors that mimic what we think of as altruism are actually well disguised overt self-interest, kin selection, and reciprocal altruism.³⁴ Sociobiology in its extreme form claims that genetic 'selfishness' is the direct cause of cultural preferences, including so-called moral behavior. Evolutionary psychology softens the image of sociobiology's strong genetic determinism with its focus, not on the gene, but on the mind.³⁵

Francisco Ayala, a former Roman Catholic priest and now celebrated biologist, points to one feature of human inheritance that bypasses biology altogether, the inheritance of information through culture, independent of biological parentage. This softens genetic determinism even more. This implies that if morality does exist, it is possible for (biologically nonadaptive) ethical values to be passed on, transcending the determinism of the gene altogether.³⁶ Ayala makes the case for the transition from biology to ethics. "He argues that 'ethical behavior (the proclivity to judge human actions as either good or evil) has evolved as a consequence of natural selection, not because it was adaptive in itself, but rather as a pleiotropic consequence on the high intelligence characteristic of human beings.' He continues: 'My thesis is that' (1) the capacity for ethics is a necessary attribute of human nature, and thus a product of biological evolution: but (2) moral norms are products of cultural evolution, not biological evolution' and 'Moral codes must be consistent with biological nature, but biology is insufficient for determining which moral codes are, or should be, accepted.'"³⁷ Peters interprets Ayala as distinguishing between the biological evolutionary character of the capacity to judge, from the cultural evolutionary character how to judge, or what is deemed good and what is deemed evil.³⁸ Ayala wants to say that the power to judge has a biological basis but morality itself does not. Peters' goal is simply to account for the experience of an apparently nonadaptive phenomenon we call morality. He argued that if sociobiology is an ideological prescription rather than a scientific description, then its effective rejection of true morality runs counter to Christian theology, where agape love is directed toward someone else. Agape love is also called neighbor love because it turns strangers into neighbors.³⁹ The self-styled philosopher of culture Friedrich Nietzsche launched perhaps

³³ Ted Peters, "Selfish Genes and Loving Persons" in Russell, Robert John, Ed., *Fifty Years in Science and Religion: Ian G. Barbour and his Legacy*, (Aldershot, Hants: Ashgate, 2004), 193.

³⁴ Peters, "Selfish Genes and Loving Persons", 195.

³⁵ Peters, "Selfish Genes and Loving Persons", 196.

³⁶ Peters, "Selfish Genes and Loving Persons", 197.

³⁷ Peters, "Selfish Genes and Loving Persons", 198.

³⁸ Peters, "Selfish Genes and Loving Persons", 198.

³⁹ Peters, "Selfish Genes and Loving Persons", 199.

the most devastating critique of Christian morality, but it was ultimately a sharp commentary on hypocrisy rather than a philosophical defeat of the existence of morality.

Attempts have been made to reconcile Christian agape with sociobiological kin preference, most notably Stephen Pope's redefinition of agape to include self-love and mutuality. Peters correctly takes Pope to task for effectively substituting *agape* with the medieval notion of *caritas*, an order of charity.⁴⁰ *Caritas* refers to a ladder of priority for our objects of love. We privilege our closest biological kin by degrees of separation and extend this circle of love outwards. This robs agape of its radical character. The other peril, that of ignoring biological reality in the name of theological fidelity is equally hazardous. Colin Grant posits the view that agape exists in the human species, and if we are descendants within the wider animal kingdom, might we not find evidence of altruism outside the human race? He thinks that sociobiology's obsession with the selfish gene has blinded their hermeneutics and calls upon theologians to hunt for just such evidence in nature. One such 'kenotic theologian' is Arthur Peacocke, who points to the sacrificial nature of an evolutionary system that ultimately paves the way for the emergence of humanity. The "biological death of the individual is the prerequisite of the creativity of the biological order, that creativity which eventually led to the emergence of human beings."⁴¹ The 'direction' of evolutionary history toward greater complexity built *ab initio* by God demands an inescapably morbid structure of reality in which death precedes life. The logic of consumption means that even God cannot avoid creation a world of predator and prey. However, in Peacocke's model, God self-empties in creating but the creation does not need to reflect God's love. Nature is given freedom to cause suffering. This is perhaps the other extreme, even in kenotic theology, of diminishing divine omnipotence in order to sustain an almost purely biological vision of nature. Ian Barbour agrees that death is a necessary feature of evolution. Pain and suffering is the outcome of the adaptive value of pain receptors to warn of danger as increased sentience in evolutionary history brought with in increased capacity for pain.⁴²

In their interdisciplinary approaches, both Barbour and Peacocke smuggle teleology into their vision of evolutionary biology to account for their theological explanation. However, as Peters points out, kenotic love refers to divine sacrifice to overcome suffering, not the exacting of suffering in evolution to accomplish some further divine goal.⁴³ We see that accommodating kenotic theology to account for evolutionary biology is just as dangerous as accommodating biology to an interpretation of theology, as in Young Earth Creationism. While Peters is sympathetic to the kenotic theological view that God permits suffering in nature as part of the cost of sentience and freedom, he posits an eschatological solution. In avoiding the possibility that empirical evidence might support a strong sociological perspective so that appeal to cultural evolution is no longer an option for theology, Peters speaks of a call to a transformed future that is more than our past.⁴⁴ I find this position underdeveloped by Peters and look forward to a more robust outline of what exactly this means for the present. At the very least, this eschatological approach cannot adequately explain why apparently selfish genes can give rise to altruistic phenotypes.

⁴⁰ Peters, "Selfish Genes and Loving Persons", 201.

⁴¹ Arthur Peacocke, "The Cost of New Life" in John Polkinghorne, Ed., *The Work of Love: Creation as Kenosis*, (Grand Rapids: Eerdmans, 2001), 35.

⁴² Ian Barbour, *God's Power: A Process View* in John Polkinghorne, Ed., *The Work of Love: Creation as Kenosis*, (Grand Rapids: Eerdmans, 2001), 4.

⁴³ Peters, "Selfish Genes and Loving Persons", 204.

⁴⁴ Peters, "Selfish Genes and Loving Persons", 206.

In the end, with its limitations, I prefer a kenotic approach that begins with theology as it discerns divine creativity and providence embedded in the evolutionary principles of biology. I hesitate to use the term ‘natural selection’ because of its confusing connotation, suggesting a Darwinian teleology that does not exist. Yet this approach requires a telos, a theological telos evident only *ex post facto* in biological evolution. Increasing complexity permitting sentience and suffering is a necessary path to consciousness and moral cognition, itself a way station to a divine destination. Here, theology justifies “nature, red in tooth and claw” and accounts for the mystery of freedom of the will, or neurologically speaking, freedom of the nil. Peters noted as a weakness the criticism of Darwin⁴⁵ to this seemingly barbaric approach. But for now, this tentative explanation is, I think, the best we have.

In the face of sociobiology’s skepticism about altruism and Dawkins’ own ambiguity about whether altruism exists, what can we make of an interdisciplinary account? It appears that Dawkins distances himself from strict deterministic sociobiologists and in theory, would have to be open to the possibility of altruism. Since he calls for it himself, we have to presume that he is a self-described altruist. The weakness of his proposal is that he cannot account for a model of how we can overcome our gene. There is no good reason why evolution of morality cannot be theistic. The kenotic theological model argues for a teleological progression of evolutionary biology based on a God who sacrificially suffered to end all suffering. While this cannot be a scientific model, it is a more satisfying philosophical model of explanation. This may serve as a template towards a theistic evolution of morality. Building on this, how might a theistic evolution of morality work? Let us turn to attempts at revising our interpretation of what happened at the Garden of Eden.

5. Falling Upwards at Eden

*Reinhold Niebuhr is reputed to have observed that original sin is the only empirically verifiable Christian theological doctrine.*⁴⁶

One of the great challenges of constructing an evolutionary model of morality is the daunting task of explaining away the perceived ‘perfection’ of creation at Eden. In fact, while the Bible refers to creation as good, good does not mean perfect. Even a cursory reading of the Bible underscores the changing social norms of morality, much of which would not sit comfortably with us today. How do we deal with the biblical doctrine of sin if morality evolved? If sin is an intrinsic factor of being human, to what end does guilt and blameworthiness serve? How does evolutionary biology provide insights for a more responsible hermeneutic?

W. Mark Richardson argues that “sin is a feature of emergent capacities we associate with being human.” For him, moral agency builds on the ‘free process’ perspective, the cost of which increases dramatically with the increasing powers of sentience in higher animals. In this view, the biblical ‘fall’ is not the tragic consequence of sin but rather, as the origin of sin.⁴⁷ Richardson wants a revision of the doctrine of sin that evolutionary theory prompts. Rather than imagining humans “originating in a primordial paradise of mature will and reason”, we might

⁴⁵ Peters, “Selfish Genes and Loving Persons”, 205.

⁴⁶ John Hare, “Whence Original Sin?” in Gregory R. Peterson, *Minding God: Theology and the Cognitive Sciences*, (Minneapolis: Fortress Press, 2003), 151.

⁴⁷ W. Mark Richardson, “Case Studies in Barbour’s Integrative Model: Liberal Anglo-Catholicism in the 1920s” in Russell, Robert John, Ed., *Fifty Years in Science and Religion: Ian G. Barbour and his Legacy*, (Aldershot, Hants: Ashgate, 2004), 167.

consider “imagining [our] species as ‘in the making’, and building up moral consciousness and agency from roots in pre-moral natural existence.”⁴⁸ By comparing biological theories of origins and theological theories of soteriology, Richardson advances a corrective to the orthodox explanation of the ‘fall’, which fuses origin and soteriology into a single doctrine that is inconsistent both with paleoanthropological findings and with a plain reading of the Bible. Surely one can observe the moral progress (by our standards) made in the Bible. Richardson points out that our increasing biological knowledge regarding the origins of humanity is reflected in the shifting Anglo-Catholic traditions, from an Augustinian ‘fall’ theology to a ‘soul-making’ theology.⁴⁹

Critics may argue that this diminishes the gravity of the disobedience and remove personal responsibility from the human race. However, this need not be the case. That the story at the Garden of Eden describes the origin of sin does not necessarily deny the notion of guilt. Although this may not be where Richardson might head, it is nevertheless consistent with the overall theme of the biblical teaching that “all have sinned” in both a personal and a corporate sense. Richardson demonstrated Ian Barbour’s integrative model of interdisciplinarity by showing how scientific advances can fruitfully chart theological reflection by limiting the wide interpretative possibilities and draw our attention to details that might be missed in the absence of a biological eye.

Gregory R. Peterson traces the evolving view of ‘original sin’ and in the light of biological evolution, rejects the Augustinian view of one human couple’s choice whose consequences we inherit. Rather than thinking of a static notion of the ‘fall’, he prefers the dynamic notion of ‘falling’ following Irenaeus’ insight that suffering is the result of the immaturity of all conscious life.⁵⁰ Peterson coins the phrase ‘falling up’ to describe the increased complexity of life, leading to greater freedom for good and evil. For Peterson, falling is not what happens to us, it is what we do! Yet, this pessimism is brightened by our eschatological hope.⁵¹ Like Richardson, Peterson wants to revise our Augustinian view of the fall and the notion of original sin to better account for what we can directly observe and infer from archeological evidence – biological evolution comports with the biblical witness that moral cognition evolved over a great span of time and moral progress continue to this day. In this interpretation of the Genesis text, we have been made in the image of God and have been falling upwards ever since.

How can we summarize our cognitive condition in the physical world? It appears that **biology and culture conspire to constrain our physiologies while moral cognition restrain our psychologies**. Increase in intellectual capacities and opportunities to exploit the earth have been tempered somewhat by our biological needs for refreshment, sleep and shelter as well as the cultural limitations imposed on us centered around our fear of isolation. (loneliness, ostracization, rejection, etc.) At the same time, ever evolving moral awareness restrains our ambitions by instinctive feelings of shame, which leads to altruism. These conditions rein in our

⁴⁸ Richardson, “Case Studies in Barbour’s Integrative Model: Liberal Anglo-Catholicism in the 1920s”, 168.

⁴⁹ Richardson, “Case Studies in Barbour’s Integrative Model: Liberal Anglo-Catholicism in the 1920s”, 180.

⁵⁰ Gregory R. Peterson, *Minding God: Theology and the Cognitive Sciences*, (Minneapolis: Fortress Press, 2003), 179.

⁵¹ Peterson, *Minding God*, 179.

potentials and well they do.⁵² Thus Richardson's claim that the origin of sin at the Garden of Eden describes the start of human moral evolution and Peterson's notion of humanity 'falling upwards' serve to frame a theistic evolution of morality. **But what does morality do?** Here, we turn to the interesting experiments in neuroscience for a possible answer that was already hinted at by Duns Scotus over 500 years ago. We speak of free will as a affirmative, volition act. But John Duns Scotus taught that nolition was just as important as volition.

6. Morality and the Free Nil?

Eric Kandel writes an account of experiments by Benjamin Libet in 1983 at UCSF. It was an attempt to advance earlier experiments done by Hans Kornhuber, who claimed that the brain exercises what he called an electrically measurable "readiness potential" about 1 second before a voluntary movement. In Libet's experiment, researchers would ask each participant to sit at a desk in front of the oscilloscope timer. EEG electrodes are affixed to the participant's scalp, and the subject is asked to carry out some small, simple motor activity, such as pressing a button, or flexing a finger or wrist, within a certain time frame. No limits were placed on the number of times the subject could perform the action within this period. During the experiment, the subject would be asked to note the position of the dot on the oscilloscope timer when "he/she was first aware of the wish or urge to act" (control tests with Libet's equipment demonstrated a margin of error of -50 milliseconds). Pressing the button also recorded the position of the dot on the oscillator, this time electronically. By comparing the marked time of the button's pushing and the subject's conscious decision to act, researchers were able to calculate the total time of the trial from the subject's initial volition through to the resultant action. On average, approximately two hundred milliseconds elapsed between the first appearance of conscious will to press the button and the act of pressing it. Researchers also analyzed EEG recordings for each trial with respect to the timing of the action. Brain activity involved in the initiation of the action, primarily centered in the secondary motor cortex occurred, on average, approximately five hundred milliseconds *before* the trial ended with the pushing of the button. That is to say, researchers recorded mounting brain activity related to the resultant action as many as three hundred milliseconds *before* subjects reported the first awareness of conscious will to act. Apparently conscious decisions to act were *preceded* by an unconscious buildup of electrical charge within the brain - this buildup came to be called *Bereitschaftspotential* or readiness potential. By observing the electrical activity of the brain, Libet could predict what the person would do before he was self-consciously aware of his will to act.

This experiment demonstrates that unconscious electrical processes in the brain (readiness potential) precede conscious decisions to perform volitional, spontaneous acts. This implies that unconscious neuronal processes precede and potentially cause volitional acts which are retrospectively felt to be consciously motivated by the subject. Did the brain cause an electrical blip before the conscious mind willed the action? Libet inferred this electrical blip in the brain to be perhaps a spark of free will.

Of course, it is possible that the will took place before the subject could identify and act upon it since verification of the subject's will depends on his proclaiming it. The experimental and technological limits notwithstanding, if this can be further substantiated, it opens the door to an inference that the choice may be determined in the brain before the mind acts, making free

⁵² For only such temperance of human possibilities can preserve the group survival of the human race. Consider the obverse in Nietzsche's call for a master morality in which only the *Urbemensch* rules.

will illusory.⁵³ A more likely answer may be that the choice is made freely but not consciously. Unconscious inference may be operating in choice as it does in perception.

The observed delay between decision and awareness poses a moral question. If electrical impulses in our brains signal decision-making, so that we decide before we become consciously aware of our will, can we be held responsible for our decisions? Do we really have free will? In his own interpretation of the results, Libet himself found room for the operations of free will in the form of a power of veto.⁵⁴

According to Kandel, psychologists Richard Gregory and Vilayanur Ramachandran draw strict limits to any implications one may make. They point out that “our conscious mind may not have free will, but it does have free won’t.” Cautioning against the reductionist sweep of inferring the sum total of neural activity simply by looking at selected neural circuits, Michael Gazzaniga adds that while brains are automatic, people are free.⁵⁵

Is consciousness merely a side effect of neuronal functions, an epiphenomenon⁵⁶ of brain states? Libet’s experiments seem to offer support to this theory that our reports of conscious instigation of our own acts is an illusion of retrospection. Can we reduce consciousness to brain states? Leibniz’s law states that for A to be the same as B, the properties of A must be the same as the properties of B. Phenomenologically speaking, the *properties* of consciousness are unlike the properties of either its neural causes or correlates. Reducing consciousness to a brain state is philosophically problematic. Causation must not be confused with ontology. Neuronal causes and correlates of conscious experiences do not amount to an ontological status. The only evidence we have of consciousness is always first-person accounts, which requires the unscientific notion of trust. The full implications of Libet’s experiments remain inconclusive.

What we can say it that the free will function of the mind in the brain appears to express cognitive nolition rather than volition. Could moral cognition, like inhibitors in synaptic transmission, be less what we will in our choices and more what we nil to restrain the exercise in our freedom of choice? This negation of will follows prior freedom to will. The analogy should not be lost to any biblical scholar who notes the divine gift of freedom in the Garden of Eden followed by the qualifier to nil any desire to eat of the fruit of knowledge of good and evil.

From the biological exploration of how the brain works in the form of the thinking mind, we seem to observe chemical inhibition of volition as the primary function of moral cognition. This is highly speculative of course, and veers onto the possibility of confusing categories. Can we really say the chemical-mechanical reactions ‘cause’ the experience of moral affection for justice over advantage (Scotus)? How can we answer Hume’s haunting query? Whence the causal link? I fear this may not be possible with scientific methods and prove unsatisfactory with theological reflection. **But we can find a link between biological consciousness and moral justice.** Let us turn next to the quest for the scientific understanding consciousness.

⁵³ Kandel, *In Search of Memory*, 389.

⁵⁴ For further discussion, see Michael Pauen, “Does Free Will Arise Freely?” in *Scientific American Mind*, Volume 14, Number 1: 2004.

⁵⁵ Kandel, *In Search of Memory*, 390.

⁵⁶ A secondary phenomenon that occurs alongside a primary phenomenon.

7. The Scientific Study of Consciousness

Beginning with Plato's posit that all humans possess eternal souls, the duality of cognition continued when the concept of the soul was adopted by Aquinas to be the divinely created generator of consciousness, further enhanced by Descartes' claim that the mind derives its spiritual nature from the soul, and in modern times, held by Sir Karl Popper, Sir John Eccles and Richard Swinburne. Gilbert Ryle however, famously derided this extra-biological notion as "the ghost in the machine" and today, most philosophers of mind work on the premise that consciousness derives exclusively from the physical brain. Whether this is a pragmatic accommodation to the limits of academic tolerance or actual commitment to the non-existence of metaphysical sources for consciousness can never be truly known. A scientific approach to consciousness is hamstrung by the boundaries set by methodological naturalism implicit in scientific investigation.

Happily, theological reflection need not be similarly bounded if Pannenberg's dictum that the God of all creation is also the God of science faces no theological objection. This means that a theological investigation that takes science seriously and is accountable to the findings of brain research is free to seek epistemic convergence between science and theology.

Let us begin with a purely scientific approach to understanding consciousness. Two names come to mind, Jim Watson of DNA fame and his protégé, the biophysicist turned computational neuroscientist, Christof Koch of Caltech. In *The Quest for Consciousness*, Koch acknowledged the modest advances made in his field in the last 30 years, when Crick committed his enormous prestige to study the great mystery: the biological nature of consciousness. For Koch and Watson, neurobiology's goal is "to map all the concepts in the vicinity of consciousness onto the properties of synapses, action potentials, neurons, and their coalitions... to concentrate on the neuronal correlates of consciousness, the NCC" and "less the enabling factors necessary for any conscious state to occur, than ... to discover the chain of neuronal events that leads up to any one specific sensation."⁵⁷ They identified 10 philosophical assumptions in working hypotheses to form a framework for consciousness.⁵⁸

As such, Koch is looking to new computational methods and algorithms as well as new anesthetic technology that permit the subject (monkeys) to be rapidly and reversibly put to sleep with electrodes in place. Thus, comparative measurements of conscious and nonconscious states in the hope of shedding light on the NCC (neuronal correlates of consciousness).⁵⁹ Insisting that all neurons have unique identities and that their messages differ depending on the nature of their target recipients, anonymous recordings that are widely practiced today will never provide sufficient help to dissect the circuits responsible for any percept.⁶⁰ Koch and Watson seek to "explain all aspects of the first-person perspective of consciousness in terms of the activity of identified nerve cells, their interconnectivities, and the dynamics of coalitions of neurons."⁶¹

Kandel points out what philosophers of mind, John Searle and Thomas Nagel claim: the current way of doing science, methodological reductionism, is incapable of discovering the

⁵⁷ Koch, *The Quest for Consciousness*, 303.

⁵⁸ Koch, *The Quest for Consciousness*, 304-310. These include The Nonconscious Homunculus, Zombies Agents and Consciousness, Coalitions of Neurons, Explicit representations and Essential Nodes, The Higher Levels First, Driving and Modulatory Connections, Snapshots, Attention and Binding, Styles of Firing, and Penumbra, Meaning and Qualia.

⁵⁹ Koch, *The Quest for Consciousness*, 312.

⁶⁰ Koch, *The Quest for Consciousness*, 313.

⁶¹ Koch, *The Quest for Consciousness*, 314.

process of subjective properties such as consciousness.⁶² Consciousness is irreducibly subjective. Few dare to dismiss (except such polemicists as Daniel Dennett) the emergentist nature of human consciousness, i.e., our apprehension of reality is achieved by conceptual powers that are far more than the sum of the constituents of the physical brain. Citing Nagel, Kandel agrees that methodologically, science lacks the rules for explaining how subjective properties (consciousness) arise from properties of objects (interconnected nerve cells).⁶³ The puzzle about the subjectivity of consciousness lies in the specific and unique **meaning** that each stimulus arouses for each one of us. Why does say, a song, a color, a scene, a smell, a touch, or a taste invoke different responses in our minds? No biological approach can hope to answer this question because science works only with the unquestioned assumption that all brains follow the same laws of biochemistry.

We have made no progress whatsoever in linking the physical brain to the metaphysical experience of the mind. For Richard Swinburne, this is not surprising. Using our consciousness to study itself, first-person accounts, are fraught with danger and risk compromising the integrity of the scientific method with scientism. This lies behind Swinburne's confidence in maintaining substance dualism - a dualist approach to the body-mind problem in which humans consist of two separate substances, body and soul. He wrote in his Gifford Lectures, "(pure) mental events (e.g. me being in pain) are distinct from physical events (e.g. C-fibres in my brain firing); the occurrence of one does not entail the occurrence of the other or vice versa, although one may cause another."⁶⁴

8. What About The Soul?

The discussions regarding the soul pits substance monism against substance dualism or, more often, dual-aspect monism (non-reductive physicalism). The question before us is whether the soul is a part of the biological body. If it is, monism is the way to go. If not, we have dualism. While the soul cannot be studied, its close correlate we call morality can be observed. The celebrated 1848 case of Phineas Gage, in which damage to the brain resulted in dramatic personality change, strongly suggests that morality has a biological basis. This permits the inference of a unity of personhood. If morality, as a mental aspect of personhood, can be changed by a purely mechanical change to the physical brain, what do we make of the notion of the soul? This word is difficult to define because it is often used to describe *via negativa*, when physical explanations fail to suffice.

Richard Swinburne, a substance dualist, points out the inadequacy of science to describe all events that we experience. A correct scientific account of the world must seek to describe mental experiences that are not entailed by brain events. He concludes that there must be two kinds of happenings to describe. He is not here talking about metaphysical phenomena, which are methodologically beyond the purview of science. He is referring to non-metaphysical mental states. They appear to be physical experiences with no certain brain correlates. Writing in 1997, the problem persists today with no breakthrough and optimism that new machinery may allow for more sophisticated methods. Swinburne claims the word **soul** to mean what is essential to the being we call human.⁶⁵ He has been criticized for not providing an explanation of exactly what a

⁶² Eric R. Kandel, *In Search of Memory: The Emergence of a New Science of Mind*, (New York: W. W. Norton, 2006), 378ff.

⁶³ Kandel, *In Search of Memory*, 381.

⁶⁴ Richard Swinburne, *The Evolution of the Soul*, Revised Edition, (Oxford: Clarendon Press, 1997), ix.

⁶⁵ Swinburne, *The Evolution of the Soul*, Revised Edition, x-xi.

soul is and how the postulate of a soul solves the problem of consciousness. He replies in the Prolegomena to the Revised Edition that a substance dualist does not claim to provide a theory to explain the physical phenomena but rather claims from experience, “dualism is involved in the phenomena, the experienced data themselves.”⁶⁶ The fact that we conscious beings have consciousness is itself a datum in need of explanation, one that appears beyond the competence of science to investigate because we hit a wall at the level of studying the brain. Here, we have the classic situation of positing the existence of soul by inference of an inexplicable phenomenon, the experience of self. Unlike a classical dualist, he does not say that we ‘possess’ a soul, but that the term adds to the biological description of whom humans are and stops biology from claiming the capacity to describe humanity *in toto*. The soul is how we experience a mental life.⁶⁷ Yet, without a functioning brain, the soul will not function.⁶⁸ However, he also speaks of the soul separating from the body, suggesting an independent existence of the soul from the body.⁶⁹

The neuroscientist, Malcolm Jeeves states, “I do not have a soul, I am a living being, or soul.”⁷⁰ For him, the understanding the neural substrates of kenotic behavior does not detract from the moral significance of altruistic acts. This is because the domains of neuroscience and of theology must be judged according to their different disciplinary criteria. Swinburne and Jeeves represent two different views of the ontological soul. New Testament scholar Joel Green offers the biblical notion of the soul as a description of human relationship to God⁷¹ rather than an entity that ‘leaves’ the body upon death. In this variation, convergence with a biological account is easier to live with. We may understand a soul to be not a ‘thing’ we possess, or a secondary form of existence, but rather a description of conscious human uniqueness, of which moral cognition is but one characteristic, a cognitive characteristic as opposed to a physiological characteristic such as full-time bipedalism or capacity for human speech. If this is correct, how does the soul and freedom relate to morality?

John E. Hare⁷² cites John Duns Scotus, who revived the ideas of Anselm, by offering his voluntarist theory of ethical obligation. According to Scotus, not everything we do is motivated by the desire for happiness. Rather, we have a pair of fundamental motivations, the affection for advantage and the affection for justice. The latter is an inclination for the good, independent of its connection to our advantage. Our motivations are characteristically mixed. The way we rank them reflects our moral posture. Our freedom, he argues lies in our capacity to possess both motivations and the will to choose to rank them.⁷³ Despite our tendency to seek personal advantage, history is replete with heroes who sacrifice themselves for no apparent earthly reward except to seek **justice**, and usually an appeal to divine justice. Skeptics might claim that heavenly reward dilutes any claim to altruism but it is noteworthy that even the noblest of pious worshippers do not ordinarily seek suffering and death just to achieve heavenly reward. Self-

⁶⁶ Swinburne, *The Evolution of the Soul*, Revised Edition, xi.

⁶⁷ Swinburne, *The Evolution of the Soul*, Revised Edition, 174.

⁶⁸ Swinburne, *The Evolution of the Soul*, Revised Edition, 176.

⁶⁹ Swinburne, *The Evolution of the Soul*, Revised Edition, 262.

⁷⁰ Malcolm Jeeves, “The Nature of Persons and the Emergence of Kenotic Behavior” in Polkinghorne, John, Ed., *The Work of Love: Creation as Kenosis*, (Grand Rapids: Eerdmans, 2001), 71.

⁷¹ Jeeves, “The Nature of Persons and the Emergence of Kenotic Behavior”, 72.

⁷² John E. Hare, “Ethics with and without God”, September 3rd, 2003, Yale Divinity School Convocation.

⁷³ Allan B. Wolter, O.F.M. (Trans.) *Duns Scotus On the Will and Morality*, (Washington, D.C.: Catholic University of America Press, 1997), 153ff.

sacrifice is usually done in the face of inescapable odds, not as an option in times of bliss. Since this is not a paper to assess the four principal ethical theories of the West (virtue ethics, voluntarism, deontology and utilitarianism), this reference to Scotus is merely to say that scientific observation leaves us with a puzzle that cannot be satisfactorily explained by sociobiology or evolutionary psychology alone. The moral gap demands performance for which humans are not equipped. Hare claims that Christian theology offers, in Christ, the capacity to close this moral gap. Hare shows that our everyday actions testify to this moral cognition and our actions support the notion of altruism.

In summary, Kandel and Koch attempt to understand the biological basis for consciousness and have so far, come up short, but they believe new techniques may hold the answer. Swinburne insists that it is a logically impossible quest. Instead, he observes that our common experience of self-consciousness invites us to accept the existence of a soul as a mark of being human, a point made also by Jeeves, who adopts Green's view that human souls share a 'cognitive link' (my description) with God. My claim is that above all else, this cognitive link is a moral one. Hare makes the case that this moral cognition is supported by observation of everyday life around the world – people on occasion, do seek justice. This lineage from **consciousness to moral justice** paves the way for a more enriched physical and theological anthropology, one that can accommodate a theistic evolution of morality. We have shown that if the neurological act of free will of moral agents includes the capacity of the free nil to veto injustice in order to seek justice, it is a short theological step to name this justice one of divine origin. But why do we seek divine justice, unless we believe and adopt the authority of this divine judge.

9. Emotion & Moral Cognition for Belief-Construction

One of the most incredible claims of the Christian faith is that God is love, and in fact, God defines the notion of love. Since love is an expression of an emotional state of being, the science of emotional cognition ought to be of interest to the scientific theologian or the theologian of science. One of the foremost explorers of emotional cognition is Joseph LeDoux. In *The Emotional Brain*, he outlines the relationship between the cerebral cortex (reason) and the amygdala (emotions) and argues that the evolution of the cross-wiring between these two parts of the human brain promises a time when we can be in full cognitive harmony between our reasoning and emotional cognitions. Emotions are crucial for the possibility of joy and pleasure. This means that moral and religious cognition demands some understanding of the evolution of emotional consciousness in the human brain. The 10,000,000,000 neurons in a typical human brain can accomplish a lot of incredible feats, but none as amazing as the creation of emotional cognition.⁷⁴ The biological role of emotions in cognition is the subject of LeDoux's study. He also notes that synaptic changes physically modify the neurons as it creates memory in the brain. He cites Gerald Edelman's argument that synapses in the brain (the gaps between brain cells through which neurotransmitters pass on information) compete to stay alive. This theory of neural selectionism points to the claim that experience of each individual brain 'selects' which synapses to keep and which to let die off. More synapses are made than are kept. The active synapses are kept and connections that are not used are eliminated. Such creation and regression of synapses form the core of neural circuitry formation.⁷⁵ If this is correct, then we subliminally

⁷⁴ Joseph LeDoux, *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*, (New York: Simon and Shuster, 1996), 22.

⁷⁵ LeDoux, *Synaptic Self*, 73ff.

select which memory to keep and which emotions to relive. The capacity for belief also draws from our capacity to relive emotional memories. Thus, how we narrate our cultural stories impact our belief-formation processes. This is why ritual and memorialization are crucial aspects of religious life. The very acts of preparation and participation in religious rituals generate new synaptic storage for our emotional intelligence. It also contributes to the quality of our beliefs. Emotions motivate our cognitive processes to select which memories to preserve.

Moral cognition plays an important role alongside emotions in belief-formation. Physical survival in societies depend on the accurate judgment of which authorities to adopt and which to reject. We make judgments on authoritative claims around us every day when we make decisions on what or whom to believe. Moral cognition provides the cognitive adaptation for the adoption of authority - the capacity and the will to believe another. This is because adoption of authority presumes its veracity when there is no way to verify by our natural senses. **We are moral so that we can believe!** True belief beyond mere intellectual assent is only possible because we have the capacity for moral cognition. It is the cognitive capacity to adopt the authority of another that both permits and demands moral cognition. Trust is an element in belief by which adoptive authority drives our behavior. **Shift of belief** (trust) from God to the serpent recorded in the Garden of Eden account, suggests the imperative of moral cognition to sustain a status of belief (adoptive authority).

In summary, we can say that religious belief formation requires the capacity to harness the power of emotional intelligence to select memories alongside the moral cognition to select which authorities to adopt. Let us conclude by tracing the biological evolution of the mind by tracing the evolution of the brain as it evolves moral cognition.

Conclusion

In the biological evolution of multicellular organisms, increased sentience gave advantage for creatures of high mobility. This came at a cost, the increased exposure and capacity to register pain and suffering. While pain receptors are adaptive features to increase survival prospects, it also paralyzes mobility when relief is not reached in time. This created motivation to avoid pain and suffering by escaping the source of it. The capacity to do so marks the facility of judgment, an exercise that utilizes emotional intelligence and the free will. This free will may be seen to seek personal advantage. However, we observe in nature that altruistic behavior exists. How can we account for this? A theory of moral cognition is called for. Judgment takes place in a context of comparative assessments. At this point, biological assessment meets ethical judgment. The capacity for ethics emerges. An agent with free will, judges to seek advantage or justice. This notion of justice has to be a universal concept.

In *Homo sapiens*, the significant increase in brain size yields a complexity necessary for a strong emergence. The result is sufficient synaptic connections for the development of symbolic language, cognitive fluidity, and emotional intelligence. Hence we find in the biological emergence of emotional intelligence, an adaptive feature that evolved to apprehend the moral notion of justice.

While the above flowchart does not demonstrate the existence of God or even the philosophical coherence of religion, my goal is more modest.

Cognitive neuroscience has established that with the existence of emotional intelligence, we have reached the boundaries of what biology and indeed, the natural sciences can explain about the uniqueness of human consciousness. That we alone among life on earth possess the

persistent trait of religious and moral cognition that displays itself most dramatically in the ritual of true altruism, not disguised kin-selection or other sophisticated adaptation for survival.

I propose that while biological inference can explain the limited circumstances when judgment leads to advantage for survival, altruism marks the response to divine justice that only a theological approach can adequately explain. The task before the interdisciplinarian of science and theology is to find the point of convergence and a method to forge an interdisciplinary framework. Since science is a self-limiting reasoning strategy, it is up to a re-imagining of the theological boundaries that holds the promise for a full scientific engagement.

If the moral mind consists of the freedom to veto volitions generated by biological possibilities of action, does this diminish the theological demands of what it means to have free will? I do not think so. Most animal actions are instinctive in that they are generated subconsciously and are response mechanisms that would take too long for reflective action.

We were made to evolve moral cognition so that we too can receive and give love, but most of all, so that we can possess the capacity for religious belief.

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