

Topic III Conference

[Primate “Ethics” and Human Morality]

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Sin, Suffering, and Salvation: What Does Evolution Have to Say About Them?

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Today we confront one of the oldest of all philosophical and (perhaps more importantly) *pastoral* problems, and one which philosophers and theologians, by general consent, seem to have given up hope of ever solving: the “problem of evil”. Why is there sin, suffering, and death in the world, and why does a benevolent and omnipotent God tolerate it? Well, contrary to the received and pessimistic opinion, I will argue that these questions have already been answered – starting with Pierre Teilhard de Chardin, who wrote 65 years ago that “the problem of evil, insoluble in the case of a static universe . . . , no longer arises in the case of a[n] . . . evolutive universe It is strange that so simple a truth should still be so little perceived and stated” (Teilhard, 1971: 196n). It is even stranger today, when we have a still clearer idea of why the fact of evolution does indeed render the philosophical “problem of evil” a mere pseudoproblem. This is what I want to make clear to you today, so that you can bring this good news to others in the course of your own pastoral work.

It’s not that we haven’t had answers to this problem up to now; it’s just that those answers are no longer operative – specifically, the traditional understanding of original sin and the “Fall of Adam”. As the ancient proverb reminds us, “When you’re up to your rear in alligators, it’s hard to remember that the original objective was to drain the swamp.” We Christians have gotten ourselves so tangled up in the Gordian knot of so-called “original sin” that we’ve lost sight of the original objective, which was to explain *why there is bad stuff in the world* – especially if we see it as a world created by a supposedly all-good and all-powerful God. This, of course, is the philosophical “problem of evil”; or, in a theological context, the problem of *theodicy*, as Leibniz called it. But before we get ahead of ourselves, we should go back to the beginning and trace the development of this problem, and clarify how it got to be so complicated – more complicated, I think, than it needs to be, although this was unavoidable when we knew much less than we do now about how this world actually works.

So I’ll first spend a few minutes reviewing some of the history of this problem, and then outline how an evolutionist might approach it (and, in fact, solve it); and finally I’ll outline the rather far-reaching implications this evolutionary solution has for Christian theology and pastoral ministry.

The Problematic Idea of Evil

First, the beginning in terms of human thought. People have always noticed that bad stuff happens: “bad” being defined as anything they didn’t like. For example, accidents, injuries, discomfort, pain, disease, and death – things that are pretty much outside the control of the people they happen to, and that we’ve come to classify as *physical evil*. Also, bad stuff that people deliberately did to each other: violence, deception, theft, and so forth – things that we’ve come to call *moral evil*, or *sin*.

Thinking people have always wondered why this is – just as they wondered about why all sorts of other things are as they are. In earlier times, they came up with explanations that anthropologists today call *etiological myths*: stories that explain present conditions in terms of what ancestors, heroes, animals, spirits, gods, or demons did at some more-or-less indefinite time in the past. Such myths were not just stories for entertainment or for frightening children at bedtime. They served the same serious function as our modern scientific theories: namely, to *make sense* of the world that the people lived in. But rather than being “scientific” or “historical” as we understand those terms (expressing observable, testable, objective “truth”), they expressed truth as a poet expresses truth, or a philosopher or theologian who couches truth in metaphorical or allegorical terms – especially when precise, objective data are, in the nature of the case, not available, such as when talking about God. So metaphor has been essential to religious language from its beginning.

The particular myth the ancient Hebrews devised to explain the etiology, or origin, of evil (all sorts of evil) was the story of the Garden of Eden in Genesis 2-3: God created a world that was “very good”, with no suffering or death. It was those pesky human beings who messed things up by not following God’s instructions; and that not only got *them* punished, but wrought all sorts of mayhem on the rest of creation as well, even bringing the possibility of death and destruction to living things and the cosmos in general.

Now that was a pretty cataclysmic event; and at least in the Christian view, starting with St. Paul in Romans 5, it was the whole reason why the Son of God had to become man and die for our sins: to appease his Father for the terrible sin of human beings. Some three centuries after Paul, St. Augustine elaborated this argument further, in the course of debating the Pelagians and rationalizing why infants should be baptized. What Augustine came up with was the doctrine of *original sin*: that the effects of the sin of Adam were somehow transmitted to all of his descendants through the concrete process of human reproduction (and not just by imitating Adam’s bad example, as Pelagians argued). These effects of the original sin took the form of a strong inclination on the part of each individual to commit *actual sins*. This mysterious “stain of original sin” could only be removed by the sacrament of Baptism; and the sooner the better (if possible, by baptizing people as soon as they were born).

I emphasize that this was a distinctively Christian, and especially Western Christian, development of doctrine – in fact, a *post-Biblical* development. The Catholic Old Testament scholar Herbert Haag, in a 1969 book, posed the question, “Is original sin in Scripture?” And he answered with a definite “No” – not even in St. Paul! Strictly speaking, the idea that as biological descendants of Adam we are automatically, passively sinners from birth has no valid scriptural warrant.

Furthermore, the Western tradition is not unanimous in following Augustine. There's a minority opinion that dates from even earlier, to St. Irenaeus of Lyons in the second century, who saw "moral evil as an inevitable result of God's creation of man as an incomplete creature, at the beginning of a long process of moral and spiritual development" (Hick, 1966: 369). Sounds very modern, doesn't it? Unfortunately, Irenaeus and many others also assumed that we *need* the challenge of suffering as part of our moral training – which may be true, but is not the explanation of evil that I favor.

Still, it was the Augustinian doctrine of original sin that became central to Western Christian anthropology (that is, the Christian understanding of human nature). It was notably reaffirmed during the Reformation, at the Council of Trent in 1546, and remains in the *Catechism of the Catholic Church* to this day (nos. 387-390, 396-412). Incidentally, it is also central to the modern "creation science" movement, which insists that the idea of evolution undermines all of Christian faith by discrediting the story of a literal Adam and Eve, and thereby making the sacrifice of Jesus meaningless. You don't have to read much of today's creationist literature to see that this is right at the heart of why they can't accept evolution: they can't see any way to make sense of sin, the Incarnation, or salvation if there wasn't a real Adam who had a real Fall. As a fellow Christian, I think it's a real shame that they're hung up on that, because I don't think they need to be.

The mainline Christian denominations aren't committed to biblical literalism to the same degree; but as I said, we Catholics still have the Fall of Adam on our books, even though those books are a bit vague about how literally we should take it. But all is not well with this explanation of evil: many Christians down through the ages have had as much trouble making sense of the Eden account as the creationists have in trying to live without it. How can a just God punish all subsequent humans, not to mention the rest of the cosmos, for the sin of one man (and the woman who put him up to it)? How fair is that? For that matter, how does that even work, in terms of human descent? For in that very same *Catechism of the Catholic Church* (no. 404) we find these remarkable words: "How did the sin of Adam become the sin of all his descendants? ... [T]he transmission of original sin is a mystery that we cannot fully understand...." Now it's not every day that you find the Catholic Church making such a frank admission about one of its main teachings!

Moreover, no less an authority than Cardinal Ratzinger (while still Prefect of the Vatican's Congregation for the Doctrine of the Faith, before his promotion to Pope) confessed the following: "The inability to understand 'original sin' and to make it understandable is really one of the most difficult problems of present-day theology and pastoral ministry" (Ratzinger and Messori, 1985: 79). For once, he seemed to agree with Teilhard, who had written as far back as 1947 that "It is no exaggeration to say that, in the form in which it is still commonly presented today, original sin is at the moment one of the chief obstacles that stand in the way of the intensive and extensive progress of Christian thought" (Teilhard, 1971: 188).

So there we have it: a huge *pastoral* (and not just a philosophical or theological) problem, crying out for a solution – a stumbling block that to this day turns people off to Christianity, and causes Christians to lose their faith. Hence this conference, wherein we are trying to give pastors and future pastors the tools to remove stumbling blocks like this from people's spiritual lives.

So let's evaluate how far we've come on this. In the beginning was the question: Why does bad stuff happen? The Hebrew answer was "Because Adam sinned." The Christian answer elaborated a bit on that, with the full-blown doctrine of original sin, welded indissolubly to the whole theology of salvation by Jesus Christ. Only, *that* answer has spawned intractable questions of its own, about the transmission of original sin and the justice of God. In other words, there was a problem; then a proposed solution to the problem, which became reified into a problem in itself that was as bad as the original problem! At this rate, we'll soon be up to our shoulders in alligators; and the swamp still isn't drained.

Now while we Western Christians have been getting ourselves into this mess, it's worth noticing that other faith communities have not waded so far into this particular swamp. Eastern Orthodoxy, for example, rejects the idea that we inherit the guilt of Adam; it teaches instead that the sinful world into which we are born is an obstacle to the communion God desires with us and which Christ restores.

Even more interesting (considering that this whole line of argument started, after all, with the *Hebrew* Scriptures) is the fact that Jews have never made such a fuss over the Fall of Adam. After Genesis 3, the Eden episode is scarcely mentioned again in the Hebrew Bible. I suppose that because they didn't have a concrete Messiah figure around which to build a theology of salvation, they felt no need to say much more beyond acknowledging that we are all sinners. But it's instructive that Rabbinical Judaism did eventually come up with a concept analogous to original sin: the idea of a conflict within us of two opposing inclinations or impulses – the *yetzer ha-tov* and *yetzer ha-ra*, respectively good and evil. And the *yetzer ha-ra* is perhaps not so much evil as just self-aggrandizing, and even necessary for survival, though needing restraint. It has even been described as "essential to life in that it provides life with its driving power" (Jacobs, 1971: 1591).

As we'll see later on, I think this is a much more balanced and more accurate way of looking at the problem than we've had in the Christian tradition. But to get there, we need to go *all* the way back, back to the Big Bang itself, in order to trace the etiology of evil in a modern, scientific sense, and see why I agree with Teilhard that the age-old philosophical "problem of evil" has in fact been solved.

An Evolutionary View

At the previous conferences in this series, the various speakers have tried to summarize the current scientific understandings of physics, cosmology, chemistry, and biology in ways that are relevant to pastoral concerns. The point most relevant at this juncture is the fact that we live in a *material* world – a world made up of matter and energy (which is equivalent to matter) – and all matter is made up of *parts*: molecules, atoms, subatomic particles, quarks, superstrings, and so on, as far down the size scale as we've been able to see. It's common knowledge that anything made of parts can *come apart*; and this tends to happen at inconvenient moments: bones break, tires go flat, hard disks crash, and so forth. When we look into the causes of these unwelcome events, we find that they are traceable to bits of matter literally coming apart at the macroscopic or (more often) microscopic level. Rupture of chemical bonds starts the propagation of a crack that leads to a broken window or a broken bone. Splitting of atoms releases

radiation from a nuclear power-plant meltdown, or the explosion of an atom bomb. Failure of oxygen supply to cells of cardiac muscle leads to loss of physiological homeostasis and breakdown of components on the molecular, cell, and tissue levels, ending in a fatal heart attack. Disruption of our bodies by a thorn or a bullet, a tiger's tooth or a parasite's larvae, causes pain, suffering, even death.

We can generalize that everything we call *physical evil* is, at bottom, an unwelcome physical *coming-apart* of something at the seams. Importantly, we can also note that the word "unwelcome" implies that "physical evil" exists only in the presence of some sentient being capable of having an opinion about it: welcoming the event, or not welcoming it. A rock doesn't care whether or not it gets broken apart, but an animal does. Therefore, although rocks and atoms had been coming apart for eons before life evolved, it was only with the appearance of *life* that "physical evil" came into existence. Hence my working definition of "evil" in general as stuff that we (or other sentient beings) don't like.

Obviously, people were not the first ones to notice these things: we can see all around us that other animals also suffer from, and try to avoid, pain, discomfort, and threats to their well-being. Furthermore, in recent decades, primatologists like Jane Goodall and many others, particularly Frans de Waal, have discovered that the behavior of the great apes, and even other species, mirrors to a disturbing degree our own behavior, both good and bad. This starts to get us into the subject of moral evil, which is supposed to be something radically different from physical evil; but first, let's just repeat that for as long as there has been *consciousness* of any sort or degree, there has been awareness of things in the world that the conscious beings would rather avoid. These things are what we mean by "evil" in the broadest sense.

Now, philosophers are accustomed to make a clear distinction between physical and moral evil: *moral evil* only comes into the picture with moral agents, namely people, who are intelligent enough to grasp the consequences of their actions and have free will to choose between morally good and bad alternatives. Intellect and free will, in turn, are traditionally regarded in Christian philosophy and theology as attributes of the separately-created human *soul*, which is said to be infused into the body at some point early in our development. So, only humans are deemed capable of moral evil, or *sin*.

As I mentioned before, biblical literalists take this logic a step or two farther, and say that sin began with the Fall of Adam. Moreover, they say Adam's sin was also the start of *physical* evil, not only moral evil, because it introduced suffering and death into the world in general: for animals too, and not just humans. Now this seems to muddle a bit that clear distinction of the philosophers between physical and moral evil: Did those two things really begin at the same moment, with the same event? Or did one grow out of and build on the other? If so, was moral evil (in the form of Adam's sin) ontologically prior? This just complicates matters further.

What *simplifies* these matters, and solves the problem, is introducing *evolution* into this picture. Up until recently (1859 and even long thereafter), not only biblical literalists but even those philosophers and theologians who were open in principle to some sort of evolutionary history (including St. Augustine himself!) did not see clearly how to fit this puzzle together. In effect, many of them still had at least one foot in a *static*, non-evolutionary world view. But others, such as the Victorian Anglo-Catholic Aubrey Moore, embraced Darwinism as a blessing to Christian theology. Moore said that

Darwinism was “infinitely more Christian than the theory of special creation” because it implied “the immanence of God in nature, and the omnipresence of his creative power” (Moore, 1889, quoted in Durant, 2001, 273.).

By 1947, Teilhard had stated the situation even more clearly:

The problem (the intellectual problem) of evil disappears. In this picture, physical suffering and moral transgressions are inevitably introduced into the world not because of some deficiency in the creative act but by the very structure of participated being: in other words they are introduced as the *statistically inevitable by-product* of the unification of the multiple. In consequence they contradict neither the power of God nor his goodness. Is the game worth the candle? Everything depends on the *final* value and beatitude of the universe -- a point on which we may well trust ourselves to God's wisdom.

[Footnote] In a general way, this amounts to saying that the problem of evil, insoluble in the case of a static universe (i.e. a 'cosmos'), no longer arises in the case of a (multiple) evolutive universe (i.e. a cosmogenesis). It is strange that so simple a truth should still be so little perceived and stated. (Teilhard, 1971: 196; emphasis in original)

I understand Teilhard as saying here that (1) physical evil is an inevitable byproduct of the fact that matter is made up of parts; (2) this does not mean God is lacking in power or goodness, because a material creation by its very nature *has to* be that way, and it's only by means of such a creation that God's ultimate purposes could be achieved; (3) the same inevitability applies to *moral* evil; and (4) consequently the philosophical “problem of evil” is merely an illusion, a pseudoproblem, that exists only in a *static* view of reality (like a six-day, young-Earth creation), whereas it *does not even arise* when one takes an *evolutionary* view of the world. This is also my conclusion.

However, Teilhard never quite convinced his church superiors that he had satisfactorily solved the problem. The catch seemed to be in that point 3: how do you get moral evil out of physical evil (or if not, where *do* you get it), and where does that leave our doctrine of original sin? I think Teilhard might have been more persuasive if he had paid more attention to the nuts and bolts of Darwinian *mechanisms*; namely, mutation and natural selection (Domning, 2010). Instead, he concentrated on the major *outcomes* of evolution, and their implications for eschatology. That was at least partly because he was trained in a time and place (early 20th-century France) when the so-called Neo-Darwinian or Synthetic Theory of evolution, uniting Darwinian natural selection with Mendelian genetics, had not yet been put together, and French biologists were still highly skeptical of the importance of natural selection (Mayr and Provine, 1980). But as I argued at our April [2012] conference, it's not just any old notion of evolution that solves the problem of evil: it's specifically *Neo-Darwinian* evolution, and the details of mechanism are absolutely crucial – not only to how evolution works, but also to what theological inferences we draw from it.

So how does a Darwinian explain original sin? It's actually quite straightforward. It comes back to the idea of physical evil as arising from physical breakage of something, often at the molecular level. One form that can take is damage to DNA: breakage of a chromosome, perhaps, or any other sort of mishap to a DNA molecule that results in a

corrupted copy of the genetic code. Most of these random copying errors are indeed misfortunes for the affected organism. But once in a while these errors, or *mutations*, happen to be useful for something; and it's precisely these that constitute the raw material of evolution – the variety among individuals on which natural selection can operate.

Something else was going on too, back when this process of organic evolution was just beginning – and maybe even before the origin of life itself. If you heard or read what Bob Ulanowicz and I said back in our April conference, you'll recall there was a lot about so-called “autocatalytic loops”, or chemical reactions that included positive feedback cycles. We said that such feedback loops not only can but *will* generate Darwinian evolution. In theory, such a loop can mutate, and then exert “*selection* pressure upon its own ever-changing constituents” (Ulanowicz, 2009: 68; italics original). Furthermore, the feedback loop exhibits something called *centripetality*: it tends to suck into itself more and more of the material and energy that sustain the loop. And of course, individual loops will compete with one another for that material and energy wherever those are in limited supply.

This implies that such an autocatalytic loop is inherently, first of all, a “*self*”, with its own identity – maybe a single droplet of interacting molecules surrounded by a lipid membrane; and secondly, that it already exhibits what I've called “selfish behavior” in the broadest sense, namely self-perpetuation and self-enhancement by acquiring as many resources as possible. And all this, remarkably, is present and fully in action *before there is even anything we have called “life”*, e.g., a cell containing something like DNA. So far, these are just chemical reactions, going on in the absence of what we conventionally call a living cell. But if we have autocatalytic chemical systems with individual identities, sucking up resources from their environment, then “selfishness” turns out to be an even older and more general phenomenon than life itself!

It seems thinkable that this is how “life” itself may have originated: with chemical reactions like this going on in a “primordial soup”, perhaps inside protective droplets, and participating in all sorts of processes that we now associate only with biology: metabolism, mutation, natural selection, ecology, competition, cooperation, and reproduction. Only later might they have evolved some sort of mechanism to make their reproduction more reliable – molecules like RNA and DNA, for example, along with all the other structures of the cells we know today. But at its beginning, perhaps, life was not a molecule like these, but rather a *process* – or if you will, a *behavior* of molecules and groups of molecules.

At least from the earliest appearance of living cells – and maybe from even earlier, when there were only the quasi-living protocells I've just described – there was, therefore, a characteristic form of behavior: amorally *selfish* behavior, which is *necessarily* the most basic behavior of any living system. Life must always sustain *itself* by acquiring materials and energy, if necessary at the expense of other life, through competition and self-interested cooperation. This behavior is *necessarily* reinforced by natural selection: if you don't do it, you don't long survive, much less evolve. This is how life and evolution *have to* work, in any material world – including the one that the Creator pronounced “very good” (Genesis 1:31).

Now let's fast-forward a few billion years to a jungle in Africa. A lot of evolution has occurred, and now we see a group of apes going about their lives, and behaving in all sorts of ways far more complicated than those ancient protocells. Studying their behavior

are some human primatologists, who are increasingly impressed by the growing list of ways the apes' actions resemble those of humans. There is making and use of tools; sharing of food; caring for the young, the aged, and the injured; empathy and cooperation of all sorts. But there is also a long list of what we call misbehaviors in our own species: aggression and bullying; theft; deception; political intrigue, status-seeking, and vendettas; premeditated murder, infanticide, and serial killings of members of their own species; cannibalism; organized warfare; and even pride, in the form of mutually-agreed-upon, face-saving public pretense.

All these things have actually been observed by scientists like Jane Goodall, Frans de Waal, and dozens of others. It was their reports, in fact, that years ago started me thinking about this subject of original sin. You see, I was trained in a technique of comparative biology called phylogenetic analysis, which is a way of figuring out the relationships among living species by looking at the things they have in common. (Here you can refer to Figure 1 in your handout.) It works by the principle of parsimony, also called Ockham's Razor: the simplest explanation of the data is the one to be preferred. For example, if you look at three living creatures, and two of them have a characteristic that's a product of evolution (say, hair) but the other one doesn't, then it's simpler to conclude that the first two have hair because they inherited them from a common ancestor, rather than having evolved them separately. The first hypothesis postulates only a single instance of evolving hair, whereas the second hypothesis postulates that it happened twice – which is inherently less probable.

In real phylogenetic research, of course, you multiply that process by dozens or hundreds of species of organisms and dozens or hundreds of characteristics, and crank it all through a computer to get the most parsimonious solution. But the idea is the same. So when I read about chimpanzees showing all those detailed similarities to our own misbehavior, I instantly saw the implication that we share those traits in common because we inherit them from a common ancestor of chimps and humans – which by definition would not itself have been human. So, first of all, the “bad” shared behaviors (any more than the “good” ones) did not originate with the *first humans*, but *before* them. Second, all these behaviors, “bad” and “good” alike (at least to whatever extent they result from genetic predispositions), could be explained as adaptive consequences of natural selection: they all contributed to the survival of the individual's own genes, so in the Darwinian sense they were instances of *selfish* behavior. And third, as I argued previously, there is no more fundamental or universal form of behavior than that; so clearly, selfish behavior in the most general sense (which is displayed by *all* living things) is inherited from the very *first* living things on this planet.

Now, at long last, we can say how a Darwinian explains original sin. It involves making a distinction (that's Catholic right there!) that theologians never previously made in this context: a decoupling between overt *actions* and the *sinfulness* of those actions. Apes and humans (and by inference, their last common ancestors) perform the same repertoire of actions; but giving the non-humans the benefit of the doubt, we don't impute “sin” to them because we don't deem them to have a level of intelligence that would make them moral agents. While not all self-centered human acts are sins, all sins are instances of selfishness. So personal sin began only with humans (however we define them), whereas the selfishness that in our case *inclines us* to commit personal sin – what the rabbis call the *yetzer ha-ra* – began long, long before, in fact with the very first living

(or quasi-living) things. This realization, I think, makes it opportune to retire “original sin”, a term which Cardinal Ratzinger himself has admitted is “certainly misleading and imprecise” (Ratzinger, 1990: 89). I’ve suggested calling it *original selfishness* (Domning and Hellwig, 2006).

From this (as you can see in Figure 2 of your handout) we can establish that physical and moral “evil” are indeed genealogically related, and that the latter has literally evolved out of the former. To review, both are rooted in the inevitably “breakable” nature of particulate matter, which is manifested in many ways (including genetic mutations). “Physical evil” typically arises out of, or consists of, some simple “breakage” or unwelcome change in material objects, often on the molecular level. Mutations (usually harmful, sometimes helpful) are a special class of such events on which natural selection can act to produce evolution, together with evolution’s inevitable corollary of selfish behavior. Among the things that have evolved, according to current science, are human beings along with their intelligence and free will, which we have predictably used to create personal or actual sin (moral evil).

“Intelligence” is now seen as not a single attribute of an individual, but as a toolbox of mental abilities, at least some of them localized in various parts of the physical brain. For example, we talk about spatial intelligence, mathematical intelligence, social intelligence, and so on. A person typically is stronger in some of these areas than in others.

One of these emergent mental abilities is now commonly spoken of as “executive functioning”, which includes planning, decision-making, judgment, and conscious control over emotions and impulses. These executive functions are based in the prefrontal cortex, which is the most recently evolved portion of the brain – the one right behind your forehead. (Following the pattern of “ontogeny recapitulating phylogeny”, it’s also the last part of the brain to fully mature, becoming completely functional only after adolescence – as I’m sure many of you have noticed!) Its neural and biochemical communications with the rest of the brain have been figured out in considerable detail (e.g., Arnsten et al., 2012). It is plain that these executive functions – inhibiting inappropriate thoughts and actions, controlling our emotions and desires, self-control in general – correspond precisely to the exercise of what we have called “free will”, and they effectively exhaust the meaning of this traditional term. It has even been discovered that the nerve cells in the prefrontal cortex shrivel under conditions of chronic stress, but can rebound if the stress disappears. This suggests a physical basis even for the acknowledged diminution of moral responsibility in people exposed to stressful conditions.

This view of our evolved intelligence as a composite of diverse faculties provides a ready explanation of how free will could have evolved. To quote one writer, “our nature is many-faceted and internally contradictory, and ... political behaviour often involves a trade-off between dispositions that work in opposition in certain contexts. The result is psychological ambivalence and flexible behavioural compromise in specifiable directions” (Boehm, 1997: 359). Such psychological ambivalence in the face of choices is just the prerequisite needed for the appearance and exercise of free will.

So I think we are justified in saying that the chemical and electrical operations of the physical brain provide a necessary and sufficient explanation (in the sense of efficient cause) for both “intellect” and “free will”, without a need to postulate an immaterial “soul” in which those attributes uniquely reside. Yes, this is a clear case where science

takes something that is spoken of as “spiritual” and explains it in purely materialistic terms and as the result of naturalistic evolutionary processes. But this is a case of what’s been called “non-reductive physicalism” (e.g., Murphy, 2006), wherein novel qualities, *emergent* qualities, can arise out of the material without being *reducible* to physical laws at a lower level of complexity. I argue that this is being materialistic in a *good* way, because it has made comprehensible something that was mysterious *not* in a good way – something that can now be seen as an unnecessary mystification of a natural process, just as special creationism turned out to be an unnecessary mystification of natural evolution. *God* is inherently mysterious, in the sense of being forever beyond the total grasp of our minds. But *nature’s* laws are not mysterious in that sense: they only pose *problems* for us to solve, and those problems, such as the workings of the brain, are within our grasp. Otherwise, science would be futile, and a waste of time: why bother trying to figure out things that are not understandable to begin with? On the contrary, science not only succeeds in figuring nature out, but (as Stanley Jaki [1974] has argued) science has historically flourished most of all in the Judeo-Christian theological tradition, which insists on a comprehensible universe with rational laws that are securely based in the fidelity of a rational and benevolent Creator.

Ours is an *incarnational* religious tradition that is completely at home in a material world. It is not embarrassed by matter, or by the fact that we have physical bodies, as are Eastern religions and notions derived from them, such as Gnosticism and Manichaeism. We hold that the material world is the good creation of a good God. So we should never hold matter in contempt, or be afraid to admit that “mere” matter can accomplish things of spiritual significance. Remember, our God is a God who did not disdain to take on a real human body (Philippians 2:5-11).

Theological Implications

So now we have well and truly crossed into the domain of theology. I hope you agree that this naturalistic account provides a necessary and sufficient explanation of “evil”, both physical and moral. It now remains to explore its theological implications, and answer some remaining questions in regard to the traditional teaching. First of all, it will be useful to give an explicit working definition of “original sin” in the traditional sense. I think a definition along the following lines should be non-controversial and generally acceptable to Catholic theologians nowadays: **“Original sin” is that need for salvation (by Christ) which is universal to all human beings and acquired through natural generation.** It has been stated by Catholic theologians that “[a]ny hypothesis capable of explaining these two dogmatic truths [the universality of sin, and participation in it through natural generation] is ... to be considered tenable” within Catholic orthodoxy (Alszegehy and Flick, 1967: 201). (Note, importantly, that this definition makes no mention of a literal Adam and Eve, nor of monogenism in any form. No apples or snakes either. And the emphasis is on what is done by *Christ*, not by Adam, which is where St. Paul in Romans 5 also put his emphasis.)

I submit that my account of original selfishness meets these conditions: Our need for salvation is *universal* to all humans because our original selfishness is inherited from the common ancestors of *our entire species* extending back to the dawn of life; and it is acquired through *natural generation* by way of our *evolutionary descent* from those

ancestors, which we all share in common. It is not acquired solely by imitation of bad example, in the Pelagian sense (although bad example certainly reinforces it). The selfish human *acts* that we deem sinful share a common ancestry traceable to the *first* living things, but they are radically decoupled, in time and in logic, from the source of their *sinfulness* or immoral character, which is our *recently*-evolved human free will (this is diagrammed in Figure 3). Like the mixing of two ingredients to make a binary chemical weapon, it is only the combination of these two elements (inherited selfishness plus free will) that constitutes personal sin. Since the sources of these separate elements need not, and historically did not, coincide in time or space, there is no reason to postulate a single human parent or couple responsible for both. Besides, monogenism is ruled out by population genetics in any event, as the geneticist Francisco Ayala explained in a 1995 article in the journal *Science* (Ayala, 1995).

Occasionally I've heard from theologians or others that this simple concept does not completely explain evil, especially the greatest evils – that something mysteriously remains, too deep for our understanding. However, I have not heard them specify what they think remains unexplained. Certainly, the hypothesis of original selfishness clears up many difficulties, such as the following:

1. The “stain” of original sin is not a result of sexuality, as St. Augustine taught. It lies not in the mode of propagation, but in the selfish tendencies that are propagated.
2. The explanation of original sin that has been most popular among Catholic theologians in recent decades, and is associated especially with the Jesuit theologian Piet Schoonenberg (e.g., 1965), is the harmful effect of the *sinful social situations* into which we all are born. This is not ruled out by my hypothesis, since culturally-learned selfish behavior reinforces genetically-determined selfish behavior. (As Rodgers and Hammerstein reminded us in *South Pacific*, “To hate all the people your relatives hate / You’ve got to be carefully taught!”) Instead, my hypothesis enhances this explanation by indicating what selfish society the *first* humans were born into: namely, a selfish *pre-human* primate society.
3. The problem of theodicy is eliminated, because creation of a material universe that produces living things, but in which evil does not arise, is intrinsically something that *cannot be done*, even by God. But it is wrong to say, as Teilhard and many others have said, that evil is *merely a byproduct* of natural laws. Instead, the physical “evil” of genetic damage and copying errors provides the raw material of evolution itself, and the amoral selfishness that helps drive evolution has played an essential, positive, *constructive* role in our creation.
4. Original selfishness can be attributed even to infants, who are innocent of sin but unquestionably self-centered from birth. Baptism initiates them into a Christian community, in which they will ideally learn Christ-like, selfless behavior, in opposition to the evolutionary selfishness otherwise inculcated by the world.
5. It would be best to leave aside talk of the “Fall” of Adam; humanity was never any better than it is today. We started at the bottom, and have been trying to climb upward on the moral ladder ever since. In Holmes Rolston’s apt phrase, sinful humanity should be seen as “failing rather than falling” (Rolston, 1999: 300). To translate the metaphorical language of Genesis 2-3 into modern, literal terms,

what we all do when we “eat from the tree of knowledge of good and evil” is just the ancient natural habit of making *ourselves* and our desires the arbiters of good and evil.

6. It would also be a good idea to stop talking about the “soul” as a separately-created *thing* that is divinely downloaded into our body, equipping us with intellect, free will, and immortality. Instead we should adopt the “non-reductive physicalism” of theologians like Nancey Murphy and Michael Scanlon. Science today sees intellect and will as emergent qualities of our evolved intelligence, and therefore as having a material basis in the operations of our physical brain. *Immortality* (which to a Christian involves resurrection of the *body*) is best seen as a gratuitous act of God’s grace in preserving the human personality when it would otherwise be annihilated in death.
7. This, in turn, raises questions about the very nature of this God. What kind of Creator would use Darwinian evolution as a creative process? I’ve suggested that God didn’t really have a choice: the law of Darwinian natural selection acting on mutation seems to be unavoidable in any kind of material universe that can support life. But a deeper truth is that only a universe that brings forth life by naturalistic laws (such as natural selection) can bring forth *autonomous* intelligent creatures who are truly independent of their Creator and capable of freely choosing to be in relation with God. In other words: from what we take to be God’s point of view, notwithstanding all those billions of years “red in tooth and claw”, a Darwinian universe turns out to be the only kind worth making. And like a solicitous, long-suffering parent, God has no alternative but to watch us make our mistakes, and stand by us in our struggles, because as free creatures we can’t be forced to do the right thing.
8. Finally, what do we mean by *salvation* in a Christian context, and what do we make of the role of Christ? Numerous Gospel passages repeat the theme that we are no longer to follow the ancient law of natural selection (favoring the strong over the weak, kin over non-kin, and self above all others), but to *defy* it outright: for example, Luke 14:26: “If anyone comes to me without turning his back on his father and mother, his wife and his children, his brothers and sisters, indeed his very self, he cannot be my follower.” However necessary that law was in making us human, we are now to transcend it and follow the *selfless* example of Jesus himself, “even unto death on a cross” (Philippians 2:8).

From the evolutionary viewpoint, we can see that what we need *salvation from* is nothing other than the selfish way of life that natural selection enforces. And the way we are saved from it is, most tangibly, by being shown an alternative, in the teachings of Jesus and the way he lived them out in his own life. His freely-accepted death was only the final, predictable, and most dramatic exclamation point in this exemplary life. St. Paul started us in our usual habit of putting all the emphasis on his death, saying for example that Christ “removed [our guilt] from our midst, nailing it to the cross” (Colossians 2:14). But we have overemphasized the literal and figurative Cross to the point of devaluing the salvific role of the life that preceded it.

Furthermore, the emphasis on the cross creates the problematic image of the Father arbitrarily demanding the sacrifice of his Son to atone for human sins. In contrast,

we see instead that Jesus' mission, intended from the beginning of time (Ephesians 1:4-14, 3:9-11; 2 Timothy 1:9-10; 1 Peter 1:18-20), was to bring about a necessary turning point in our evolution, from a selfish to a *selfless* orientation, telling us in Mark 1:15, "Reform your lives."

I submit that there are no theological issues of greater practical relevance in pastoral ministry than these. For example, just this past September, Georgia Congressman Paul Broun, who sits on the House Science, Space and Technology Committee, said the following in a speech at a Baptist church: "All that stuff I was taught about evolution and embryology and Big Bang theory, all that is lies straight from the pit of hell. And it's lies to try to keep me and all the folks who are taught that from understanding that they need a savior." On the contrary: evolution, properly understood and properly explained, *helps* people understand, not only *that* they need a savior, but *why*.

In conclusion, I think we have before us a coherent, hopeful message to offer the world: not a story of an unjust God inflicting collective punishment on the human race for the sin of one man, and then demanding his own son's blood in some kind of warped restitution; not a story in which sin, guilt, and punishment are the dominant themes. Instead we have the Good News of a good God who is in charge from the beginning, with plans for our welfare and not our woe (Jeremiah 29:11); a patient and dependable God who has been at work, not just for six days but for 13.7 billion years without interruption, making a universe that could first become conscious of itself and its Maker, and then respond to the invitation to participate in its own making. In this message, evil and sin lose none of their horror; but they find their true place as unavoidable features of a material creation – and even as essential tools of creation, in the cases of mutations and natural selection. They are features that even God could not eliminate. God can only accompany us through our struggles with them, like a solicitous parent accompanying a child through the pains and disasters of adolescence. Like bringing a child into a dangerous and sin-filled world, creation is not something even God can undertake without risk; but it is the only door to a future of hope.

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Homologous Traits:

similar because inherited from a common ancestor.

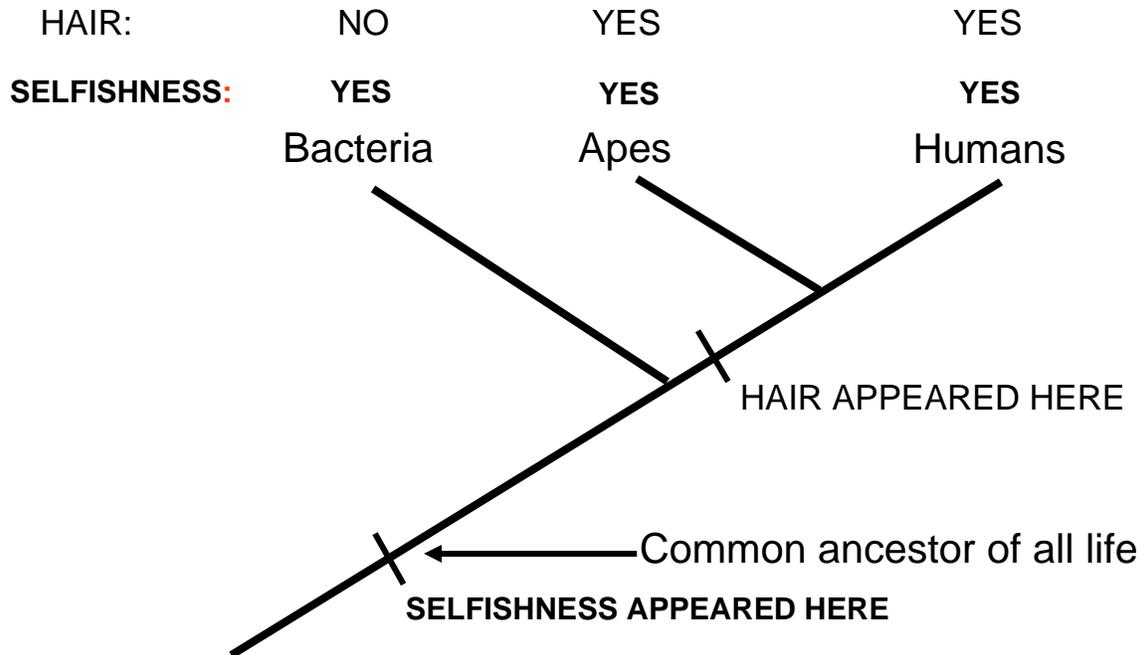


Figure 1. A diagram (or “cladogram”; more or less, a “family tree”) illustrating the principle of phylogenetic or cladistic analysis, in which degrees of relationship among organisms are inferred from their possession of *shared derived characteristics*. For example, true hair, found only in a few kinds of animals, is considered to be a “derived” trait rather than a “primitive” one for organisms in general; i.e., possession of hair evolved from the state of not having hair, rather than vice versa. It is more parsimonious to assume that any given trait evolved only once rather than more than once, in the absence of evidence to the contrary. Therefore, the presence of hair in both apes and humans (but not in most other organisms, for example bacteria) is most parsimoniously explained by the hypothesis that hair evolved once (in the common ancestor of apes, humans, and all other mammals) rather than once in apes and again, separately, in humans. Shared possession of hair thus supports the conclusion that apes and humans share a more recent common ancestor than either does with bacteria. (Hair is thus said to be *homologous* in all mammals, rather than evolved convergently in different ones. In comparative biology, this and many other such characteristics are used together, in computerized analyses, to find the most parsimonious patterns of relationships among organisms in general.) By extension, any trait that characterizes all living things can be inferred to have arisen in the common ancestor of all living things; i.e., it is basic to life itself. An example of this is self-perpetuating or “selfish” behavior on the most basic level – without which living things would not survive for any appreciable length of time, and which is therefore automatically enforced by natural selection and becomes programmed into their genetic code. We therefore share an inclination to self-perpetuating behavior with all other living things.

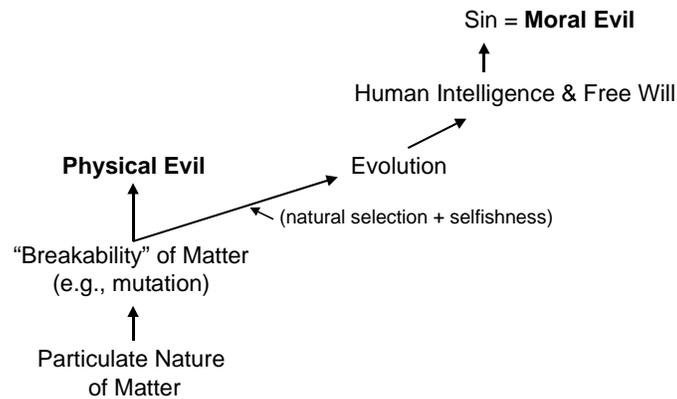


Figure 2. The common origin of, and the causal relation between, physical and moral evil. Both are rooted in the inevitably “breakable” nature of particulate matter, which is manifested in many ways (including genetic mutations). “Physical evil” typically arises out of or consists of some simple “breakage” or unwelcome change in material objects, often on the molecular level. Mutations are a special class of such events (usually harmful, sometimes helpful) on which natural selection can act to produce adaptive evolution, together with evolution’s inevitable corollary of selfish behavior. Products of this evolution include our intelligence and free will, which we have predictably used to create personal or actual sin (moral evil).

Universal Need for Salvation = “Original Sin”

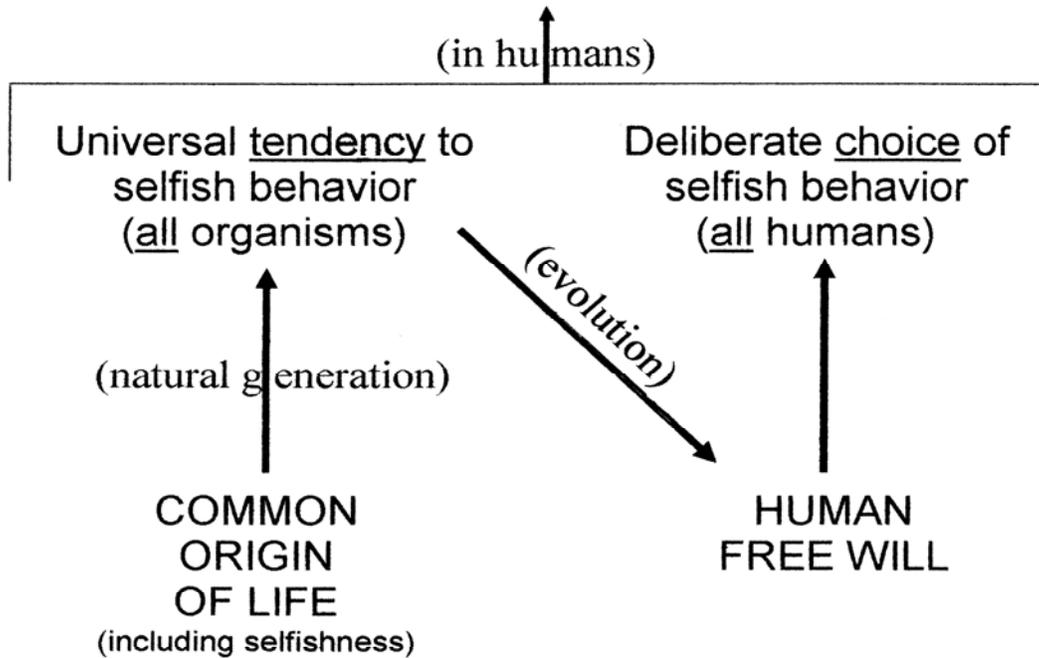


Figure 3. The composite origin of “original sin”. Starting with the earliest living things on Earth, natural selection, acting *through natural generation*, enforced selfish behavior on *all the descendants* of those common ancestors (as it would also do on any living things that evolved independently on other planets). In the ensuing course of evolution, there arose creatures with free will, who affirmed their selfish genetic (and culturally-reinforced) tendencies by deliberate choice in committing actual sins. These two elements (*universality* of the tendency and decision to sin, and acquisition of that tendency through *natural generation*) combine in us to bring about our universal need for salvation (= “original sin”).