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An Evolutionary Adaptation of the Fall

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Abstract

According to John Polkinghorne, the Fall is the major Christian doctrine that is the most difficult to reconcile with contemporary science. Like him, however, I believe it is vitally important, even in this regard, to try to pinpoint the extent to which taking science seriously requires us to modify traditionally held beliefs. In this paper I focus on two problematic ideas associated with the Fall: (i) the idea of a primordial human couple (Adam and Eve), and (ii) the idea that this couple was subjected to bodily death as a result of their original misdeed. I argue that, contrary to appearances, it is possible to harmonize these beliefs with contemporary science – at least if one presupposes some kind of soul-body dualism. I also try to show that this dualism, although philosophically non-fashionable nowadays, is yet to be refuted or made redundant by current evolutionary theory or neurophysiology.

Keywords

Evolution, Adam and Eve, John Polkinghorne, Assumptions into Heaven, Cartesian Dualism

1. Introduction

Engaging with Anglican priest and physicist John Polkinghorne, I shall focus on the Fall: 'the major Christian doctrine that I find most difficult to reconcile with scientific thought'.[1] Like Polkinghorne, I admit that this doctrine provides a 'rather extreme test case' and that reconsiderations thereof should be offered with appropriate tentativeness, but still I wish to see whether, or at least to what extent, orthodox Christian belief can be made consonant with our present scientific understanding of biological evolution.[2] Stuck in the middle,

[1] John Polkinghorne, *Reason and Reality: The Relationship between Science and Theology* (London: SPCK, 1991), p. 99.

[2] *Ibid*., p. 101.

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as it were, I share Polkinghorne's fear that some liberals may find the whole enterprise 'fantastically archaic', while some conservatives may find it 'dangerously speculative'.[3] In the spirit of my guide, I simply offer the following discussion as a possible contribution to the 'acute'[4] and 'necessary'[5] task of pinpointing 'the extent to which taking science seriously requires us to modify orthodox belief'.[6]

The doctrine of the Fall (as traditionally understood) implies several difficulties. Two particularly problematic ideas will be considered here, namely, (i) the idea of a primordial human couple, and (ii) the idea that this couple was subjected to biological death as a result of their original misdeed. Choosing a different path than Polkinghorne, I shall argue (in §§2–3) that these ideas can be squared with evolutionary theory if one is prepared to accept some kind of dualistic soul-body anthropology according to which the existence of a human being necessarily involves the existence of an immaterial and subsistent soul. Seen from an evolutionary point of view, of course, this dualism raises perplexing difficulties of its own. Towards the latter stages of this paper, I will attempt to clarify (however inadequately) two such issues: the function of the immaterial soul vis-à-vis the material evolution of the mind (in §4) and the causal interaction between body and soul (in §5).

2. Adam and Eve

To begin, then, let us look at the traditionally alleged historicity of Adam and Eve from an evolutionary point of view, according to which all biological species, including *Homo sapiens*, have evolved gradually (mainly through natural selection) from a universal common ancestor. How is the idea of a first human couple to be understood against such a background?

The difficulty, to be more precise, is that speciation (i.e. the arrival of new species) is a gradual process. How then to make sense of the claim that Adam and Eve were the *first* human beings? Their biological parents (four individuals, presumably) obviously belonged to the same biological species as themselves. Presumably, then, it must be concluded that the decisive ontological difference (if such there were) between the first human couple and their non-human biological

[3] John Polkinghorne, *Scientists as Theologians: A Comparison of the Writings of Ian Barbour, Arthur Peacocke and John Polkinghorne* (London: SPCK, 1996), p. 83.

[4] John Polkinghorne, *Belief in God in an Age of Science* (New Haven and London: Yale University Press, 1998), p. 88.

[5] Polkinghorne, *Scientists as Theologians*, p. 83.

[6] John Polkinghorne, *Serious Talk: Science and Religion in Dialogue* (London: SCM Press, 1996), p. 17.

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parents was of a non-biological sort – from which it follows that membership of a certain biological species is not a sufficient condition for being human. Rather the decisive ontological difference between the first human couple and their biological parents would seem to have been of a non-empirical, spiritual kind. Thus anthropological dualism presents itself: unlike their non-human parents, Adam and Eve were embodied immaterial souls, not essentially procreated but rather directly created by God – or so, at any rate, I suggest. There is nothing novel about this suggestion, however. Addressing 'the doctrine of evolution' in 1950, Pope Pius XII affirmed as much, saying that *if* the first human body originated from 'pre-existent and living matter', its associated soul was nevertheless 'immediately created by God' – for this 'the Catholic faith obliges us to hold'.[7] As to the very tricky questions of how the immaterial soul-substance is related to the evolution of the mind, which neurophysiologically depends on the brain, and to the material body, discussions will have to await sections 4 and 5. Here it will suffice to conclude that the living material bodies of Adam and Eve differed generically from the living material bodies of their conspecifics only in virtue of possessing a specific spiritual property, namely, the property of having been infused with immaterial human substances or souls, created and imparted directly by God.

3. Bodily Death

So far so good – if one is prepared to accept anthropological dualism. There is then a clear sense in which Adam and Eve were the first human beings. This, however, does little to vindicate the traditional Christian picture of the Garden of Eden: a primordial paradise in which lions and lambs supposedly lived together in playful harmony. This primeval earthly paradise, I believe, is forever lost – or rather it did not exist in the first place. In light of modern evolutionary science, we now know that death and extinctions have been part and parcel of biological evolution right from the biogenetic beginning some 3.5 billion years ago. As Polkinghorne says,

> It is obvious that our knowledge of the long history of life, with the mass extinctions that have punctuated it, does not permit us today to believe that the origin of physical death and destruction is linked directly to human disobedience to God.[8]

[7] Pius XII, *Humani Generis* (1950), § 36. Accessed 2012–11–27 at <http://www.vatican.va/holy_father/pius_xii/encyclicals/documents/hf_p-xii_enc_12081950_humani-generis_en.html>.

[8] John Polkinghorne, *Exploring Reality: The Intertwining of Science and Religion* (London: SPCK, 2005), p. 139.

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The Christian notion of Eden might well symbolize an original state of spiritual innocence, justice, and grace, a state whose paradisal qualities consisted primarily in an unbroken relationship between Adam, Eve, and God – but it can no longer be interpreted as a description of a historical setting where all of God's earthly creatures were at peace.

Modern science, then, forces us to rethink the prelapsarian blessedness of Eden. Trying to do as much justice as theologically possible to the starkness of the evolutionary world view, I would like to suggest that Adam and Eve were by no means free from anxiety, ageing, danger, or physical pain. *Pace* Thomas Aquinas, their soft bodies were *not* 'preserved from suffering injury from a hard body'.[9] Rather like Jesus much later, they may even have 'offered up prayers and supplications, with loud cries and tears, to the one who was able to save … from death' (Heb. 5:7).[10] For on the evolutionary scenario as depicted here, a scenario in which death was a ubiquitous reality of nature, Adam and Eve, too, needed to be freed from that chain of deterioration that would otherwise lead, inevitably, to their own bodily demise. And yet they were not freed – or so the story goes. Having yielded to temptation, they found themselves naked before God, stripped of their original justice. As a consequence, just as God had warned beforehand, they were subjected to physical death: 'you are dust, and to dust you shall return' (Gen. 3:19).

Here, then, we encounter the particular doctrinal difficulty with which the present section is concerned. Pondering 'the mystery of death [which] utterly beggars the imagination', the Vatican II constitution *Gaudium et Spes* decrees that humans 'would have been immune' from 'bodily death' had they not sinned.[11] This idea is not a little odd from an evolutionary point of view. The inevitability of death had already steered the course of nature for countless ages before the first humans appeared on the scene, and yet we are to believe that these evolutionary newcomers were originally *not* intended to die? How to make sense of this idea, the idea that Adam and Eve were subjected to biological death only as a result of the Fall?

In response, however speculatively, this is what I propose: we need to universalize the Christian notion of a bodily assumption into heaven. Paradigmatically, of course, according to Catholic, Eastern

[9] Thomas Aquinas, *Summa Theologica*, §1.97.2. (Tr. by the Fathers of the English Dominican Province.)

[10] Scriptural quotations are from the New Revised Standard Version Bible, copyright 1989, Division of Christian Education of the National Council of the Churches of Christ in the United States of America. Used by permission. All rights reserved.

[11] *Gaudium et Spes* (1965), §18. Accessed 2012–11–27 at <http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_const_19651207_gaudium-et-spes_en.html>.

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Orthodox, and Oriental Orthodox teaching, Mary the Mother of God was bodily taken up into beatific bliss at the end of her earthly life. This doctrine is fully consonant, I believe, with the idea suggested earlier, namely, that to be a sinless human being (like Adam and Eve prior to the Fall) is by no means to be free from anxiety, ageing, danger, 'injuries caused by hard bodies', or physical pain. Accordingly, as a possible means to harmonize the theory of evolution with the doctrine of the Fall, I suggest that God originally intended for *all* humans to be bodily assumed into heaven at the end of their earthly lives. That is to say, had they remained firm, humans, who are embodied souls, would never have been separated from their physical bodies but would rather have remained ontologically intact, being eventually assumed by God and gloriously transformed into everlasting shape. Whatever the truth value of this suggestion might be, this much, happily, accords with Aquinas:

> . . . he [man] was not placed from the beginning in the empyrean heaven, but was destined to be transferred thither in the state of his final beatitude.[12]

Heaven is not, and has never been, and was never intended to be, a place on earth.

Admittedly, given our postlapsarian perspective and copious experiences of divine hiddenness, this speculation is enormously counterintuitive. A world where God frequently removes doddering human bodies out of sight? Perhaps some critics will counter that the whole idea of bodily assumptions into heaven smacks of capricious magic and sits ill with a scientific understanding of the regularities of nature. But then I beg to disagree. Borrowing from Polkinghorne's discussions about miracles, I think that 'these strange events can be set within a consistent overall pattern of God's reliable activity'.[13] Indeed, the 'overall pattern' in question would not only have included the bodily assumption of *all* humans, had they remained firm, but it would have been consonant, presumably, with God's purpose for creating humans in the first place. As Polkinghorne has long been at pains to show, the ultimate Christian hope is for the general bodily resurrection of the dead, historically anticipated by the particular bodily resurrection of Christ. But this eschatological scenario, involving all human bodies, is no less miraculous or spectacular (or, for that matter, speculative) than the hypothetical prelapsarian scenario I have just painted. In either case, God supernaturally ensures that all human beings – bodies and souls together – are finally assembled before him.

[12] Aquinas, *Summa Theologica*, §1.102.2.

[13] John Polkinghorne, *Science and Providence: God's Interaction with the World* (London: SPCK, 1989), p. 51.

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As a bonus, the above bodily assumption proposal may find some scriptural support. There is the enigmatic figure of Enoch who 'walked with God' until 'he was no more, because God took him' (Gen. 5:24; cf. Heb. 11:5). Then there is Moses, the servant of the Lord, who died and was buried by God in Moab, 'but no one knows his burial place to this day' (Deut. 34:5–6) – Moses, moreover, whose body (according to Jude 9) was involved in a dispute between Michael the archangel and the devil. Also, there is the prophet Elijah who was taken away from his disciple Elisha, carried by a 'whirlwind into heaven' (2 Kings 2:11). Obviously, these glosses do not in the least suggest that the bodily assumption proposal is thus confirmed by *the Bible*, so to speak, but they do serve to reinforce the impression that it should not simply be dismissed as an ad hoc manoeuvre or a theoretical construction that is alien to Christian thought.

Summarizing our discussion so far, I conclude that the doctrine of the Fall need not conflict with the theory of evolution – at least not as long as the associated notion of Eden is appropriately reconceptualized. Again, however, this attempted harmonization presupposes some kind of anthropological dualism: a nowadays controversial philosophical position whose intelligibility we must now try to disclose.

4. The Relationship between Soul and Mind

If the above suggestions are true, the first human bodies differed generically from the bodies of their non-human conspecifics only in virtue of having been infused with immaterial human substances or souls, created and imparted directly by God. A human being, then, as I see it, involves both a material body and an immaterial soul – and this much is consonant with traditional Christian anthropology. Exactly how these two substances are believed to combine so as to yield a particular anthropological unity – a human person – is not clear, however, either from a theological or a philosophical point of view. Nor is it clear what exactly an immaterial substance is supposed to be in the first place. In this section we shall focus on the question whether the notion of an embodied soul is consistent with our current knowledge about the evolution of the mind and its neurophysiologic dependence on the brain. In other words, as Michael Ruse has pointed out, we shall have to 'spell out the relationship between mind and soul' and 'show how the one part evolved and the other did not'.[14] Then (in §5) we need to address the well-known dualist

[14] Michael Ruse, *Can a Darwinian Be a Christian? The Relationship between Science and Religion* (Cambridge: Cambridge University Press, 2001), p. 75.

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problem of how to explain the causal relationship between two so dissimilar things as body and soul.

To re-start, then, let us for the sake of simplicity suppose that humans are the only corporeal beings to have been imbued with immaterial souls. It then needs to be concluded right away that mental phenomena or abilities such as sense experience, excitement, frustration, fear, empathy, affection, memory, and even rudimentary levels of communication and rational thought are *not* necessarily associated with the soul, as there are many non-human species that experience or exhibit these things. Accordingly, having assumed an evolutionary outlook, we then need to add another conclusion, namely, that quite remarkable mental features have arisen gradually through the ordinary processes of selection and genetic drift. Given these introductory conclusions, however, one wonders what mental characteristics might be left for the *soul* to explain. Is there anything unique about humankind that the ordinary mechanisms of evolution are unable to account for?

Now we shall have to tread carefully. Speaking for myself, this is particularly pertinent, as I have no biological or zoological expertise. Yet it strikes me as a remarkable fact of nature that the general level of human intelligence is so much higher than that of any other species, including that of our closest genetic relatives: the chimpanzees. The average intelligence level of chimpanzees seems to be much more readily comparable with that of dogs and parrots and elephants and dolphins than with that of humans. But is it not plausible to assume that having a slightly higher intelligence than the average specimen would count as an evolutionary advantage to (just about) *any* primate in *any* environment? So why is it that the cognitive capacities of chimpanzees are nicely comparable with those of gorillas but so very different from our own, despite the morphological and genetic fact that chimpanzees are more closely related to us than to them?

To be perfectly clear, I am not suggesting that higher apes and other advanced non-human species *lack* intelligence. For example, chimpanzees in Senegal have been observed to sharpen tools in a spear-like manner to be used for hunting, indicating 'the kind of foresight and intellectual complexity that most likely typified early human relatives, e.g., Australopithecines'.[15] Similarly, a chimpanzee at a Swedish zoo has gained international fame for preparing and compiling stones to be used as missiles against spectators, indicating 'a flexibility associated with mental pre-experience of an upcoming event' that may be 'parallel to human evolution, where similar forms

[15] Jill D. Pruetz and Paco Bertolani, 'Savanna Chimpanzees, Pan troglodytes verus, Hunt with Tools', in *Current Biology* 17 (March, 2007), pp. 412–7, at p. 414.

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of stone manipulation constitute the most ancient signs of culture'.[16] But these and similar examples merely go to prove the point. Although many species exhibit noteworthy cognitive abilities, abilities that even resemble those of our own ancestors some 2.5 million years ago, there is quite an enormous average gap of intelligence that separates *Homo sapiens* from the rest of the field. As far as the known mechanisms of evolution are concerned, one would have expected to find in nature a smooth continuum of different levels of intelligence. Instead, one finds *one* particular species with a massive cognitive advantage. How to account for this extraordinary state of affairs?

Agreeing with philosopher Thomas Nagel that the known mechanisms of evolution are unable to explain this surprising characteristic, Polkinghorne looks to future insights into 'higher-order organizing principles, at work in the history of the world',[17] predicting that these 'top-down' organizing principles, although 'presently unrecognized', will find space for manoeuvre in terms of 'information input', veiled within the 'intrinsic unpredictability of chaotic systems'.[18] My own theory, by contrast, is much less articulate. I think it is precisely the immaterial soul that is somehow responsible for the uniqueness of human rationality. Adopting Polkinghorne's terminology, it may even be said that the soul is characterized by a 'top-down' organizing capacity in terms of information input. What crucially separates my own proposal from Polkinghorne's is my (comparatively more orthodox) insistence upon the soul as a subsistent entity. Thus, whereas Polkinghorne prefers to describe the soul as the 'form' or 'almost infinitely complex information-bearing-pattern' of the body, I propose instead to describe it as a particular substance in its own right: a rational something that is supernaturally added to a hominid body.[19]

At least for all I can see, it is not incompatible with current science to suggest that the uniqueness of human rationality is thus due to the

[16] Mathias Osvath, 'Spontaneous planning for future stone throwing by a male chimpanzee', in *Current Biology* 19 (March, 2009), pp. 190–1, at p. 191.

[17] Polkinghorne, *The Faith of a Physicist: Reflections of a Bottom-Up Thinker* (Princeton: Princeton University Press, 1994), p. 18.

[18] Polkinghorne, *Faith of a Physicist*, pp. 77–8. It may be noted that even if this prediction would turn out to be true, it would not seem to explain why no species apart from *Homo sapiens* has developed a comparable level of cognitive capacity.

[19] Polkinghorne, *Exploring Reality*, p. 47 (emphasis removed). By comparison, Aquinas (following Aristotle) seems to be trapped in the middle: on the one hand he affirms that the soul is the *form* of the body, and hence not a substance of its own, and yet on the other hand he stresses that 'the principle of intellectual operation which we call the soul, is a principle both incorporeal and subsistent' (*Summa Theologica*, §1.75.2). According to my own proposal, the soul may perhaps be said to be the 'form' of the body in the sense that it is what makes the body a human (rather than mere hominid) body.

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mysterious activity of immaterial substances. On this view, then, as Descartes would say, the soul is essentially a thinking thing. But the soul is also somehow characterized by its relation to a particular material body: a body with which it is able to interact (see §5). Again, exactly how soul and body may combine so as to yield a particular human person is not clear, but I would think that the following definition is acceptable (or at least familiar enough) to many Christian theologians: *A human being is a rational soul who is essentially directed towards a particular body*. Notably, this definition would seem to allow for disembodied human existence and the preservation of personal identity in an intermediate state (between death and Judgment Day), while excluding Gnostic ideas of bodily captivity and the evilness of matter. It should be admitted, however, that the directedness in question (or the soul's alleged corporeal intentionality or material orientation) is not very illuminating. Suffice it to say that a soul cannot exist but for the existence (present and/or past) of a corresponding body – and it may be added that such metaphysical dependence on a particular body, not only to exist but also to receive sensory impressions, makes the soul *desire* its body, and in this way, too, to be directed towards it.

Thus, to conclude, the immaterial soul is what makes its assumed hominid body a *human* body, because it infuses this body with its high-level capacity to deliberate. Suppose we could perform the decisive (but luckily impossible) experiment: remove a soul from its *live* hominid body. If the present suggestion is true, the cognitive capacity of the resulting primate would immediately drop to about the same level as that of chimpanzees and other non-human hominid species. From a scientific-methodological viewpoint, of course, this is utterly unverifiable. And yet it is not immune to scientific progress. If Polkinghorne's prediction, for example, is ultimately vindicated, we will be able to explain (or at least understand better) how the higher-order rationality of the human mind has emerged through natural processes alone, and then the above 'soul-of-the-gaps' proposal would seem to become redundant and obsolete. But this is a risk that anyone who endeavours to propose a theistically motivated explanation for a particular feature of the world will have to take. Indeed, inspired by Polkinghorne's own tentative conclusion regarding another contentious topic (viz. that of anthropic fine-tuning in the universe), I simply suggest that it is 'not inconceivable – I say no more than that – that part of the divine Creatorly activity brought it about' that the cognitive capacities of *Homo sapiens* greatly exceed those of any other species.[20] My point is simply that one can affirm

[20] Polkinghorne, *Faith of a Physicist*, p. 79.

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(for theological and/or philosophical reasons) the existence of embodied rational souls without risk of being gainsaid by contemporary science. As far as I can tell, neither the natural evolution of the mind, as we presently understand it, nor its neurophysiologic dependence on the brain runs counter to the idea that the rationality uniquely associated with humankind is due to the innate capacity of subsistent immaterial souls, supernaturally created in the image of God.

5. The Relationship between Soul and Body

But then how to account for the alleged causal interaction between an immaterial soul and a material body? How can two so very different things interact at all? So far this problem has been largely ignored, but now we must at least address it properly – all the more so since it appears to be the main reason why Polkinghorne is reluctant to embrace anthropological dualism in the first place. Speaking of the 'great weakness' of Cartesian substance dualism (of which the present proposal is an example), he posits two questions:

> How does it come about that the mental act of deciding to raise my arm results in the physical act of its actually being raised? Or how does it come about that the intake of drugs can so decisively affect my mental experiences?[21]

According to Ernest Sosa, current editor of two influential philosophical journals (*Noûs* and *Philosophy and Phenomenological Research*), the answers are clear:

> ... there can be no interaction between an immaterial soul and a material body. That of course has been the view of so many, since Gassendi [1592–1655] to the present, that it is firmly settled as a platitude of introductory philosophy.[22]

Jaegwon Kim, however, another non-dualist philosopher and co-editor with Sosa, warns against repeating this commonplace without also presenting 'a real argument' in its favour, that is, an argument that actually makes it clear *why* the Cartesian kind of inter-substantial causation is impossible.[23] Even if 'the nature of the causal relationship between a soul and its physical body is mysterious', as the

[21] *Ibid*., p. 19.

[22] Quoted in Stewart Goetz and Charles Taliaferro, *Naturalism* (Grand Rapids, Michigan: Wm. B. Eerdmans, 2008), p. 59.

[23] Jaegwon Kim, 'Lonely Souls', in Kevin Corcoran, ed., *Soul, Body, and Survival: Essays on the Metaphysics of Human Persons* (Ithaca and London: Cornell University Press, 2001), pp. 30–43, at p. 32. Kim suggests that neither soul-body interaction nor soul-soul interaction is possible, arguing that 'the possibility of causation between distinct

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dualist philosophers Stewart Goetz and Charles Taliaferro admit, it is a different story whether this mystery 'rises to the level of a decisive objection against dualism'.[24]

Unfortunately, I am unable to bring much light on this dark issue. To begin with, however, I would like to give a word of caution to fellow theists. I find it surprising that Polkinghorne of all people takes issue with Cartesian dualism on this point. Surely *all* theists believe that *God*, who is immaterial, is able to do with material bodies whatever he wills. That is to say, all theists believe that inter-substantial causality is *possible*, at least in a mind-to-matter direction. So why should this mysterious kind of causality be a stumbling block for theists to affirm the possibility also of soul-body interaction? It will not do to reply that God, unlike humans, is all-powerful and that *therefore* he is able to exert causal influence on the material world. We cannot solve one mystery (inter-substantial causality) by adding to it yet another (omnipotence). Hence, to the extent that soul-body interactionism poses a metaphysical problem, it poses it for theists, *simpliciter*, and not just for substance dualists like Descartes.

Next, on a more positive note, one may try to shorten the substantial gap between body and soul by pointing out that, although the soul as an immaterial substance lacks spatial extension, it does not lack temporal extension. Indeed, if souls were somehow timeless or outside time then they would not be able to change or mature, since these developments *presuppose* time. But humans are essentially changeable beings, dynamic rather than static, capable of undergoing processes like, say, growing in wisdom. Therefore it is natural enough to suppose that souls are temporally extended substances. If so, however, it may well be a fact (contingent or necessary) that no two souls have exactly the same temporal extension and hence that no two souls are created at the exact same time t. Accordingly, if a particular human body b_1 is united to soul s_1 rather than soul s_2, one way of identifying s_1 could be by reference to t.

However, even if s_1 has a unique temporal extension, this does not explain the more difficult issues at hand: Why is it that only s_1 (rather than s_2 or some other soul) is able to influence b_1? And why is it that the sensory perceptions of b_1 are registered by s_1 only? In short: what kind of relationship R holds between b_1 and s_1 that enables them to interact with each other? For surely s_1's beginning to exist at t is neither a necessary nor a sufficient condition for its

objects depends on a shared spacelike coordinate system in which these objects are located' (*ibid*., pp. 42–3).

[24] Goetz and Taliaferro, *Naturalism*, p. 70.

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interaction with b_1. In response, one might be naturally inclined to search instead for some kind a spatial relationship: in particular a relation of contiguity. However, for such a relation to obtain, s_1 must of course be located in space – either (one would think) by occupying a geometric zero-dimensional point, or else by being a spatially extended simple (a 'soul-string' perhaps) made up of some ethereal non-material stuff. Now although both these ideas may deserve attention, it is perhaps safer to suggest that souls have no spatial properties whatever, and then it follows that R cannot be analysed in terms of contiguity. But then again: how should R be analysed?

Given a theistic framework, the answer, I think, is clear enough – albeit not very illuminating: s_1 and b_1 are capable of causal interaction through divine ordinance. When creating s_1, God simultaneously directs it towards b_1, giving the former the ability both to be influenced by and to influence the latter. Thus R may be seen as a kind of *haecceitistic* relation: s_1 has been divinely enabled to causally interact with *this* particular body – b_1 – alone. Hence no soul but s_1 has the God-given ability to absorb the subjective sensory experiences of b_1 as its own, nor is any other soul able to inform the neural network of b_1 with its higher-level cognitive capacities. As to *how* these interactions are effectuated, however, we shall in all likelihood remain in the dark – 'as far as we are concerned', says Kim, 'that can remain a mystery forever'.[25] Perhaps quantum indeterminacy plays a role (at least in a mind-to-matter direction), enabling s_1 to realise certain rather than other potential sub-atomic outcomes which in turn may stimulate the electro-chemical signalling in the brain of b_1 in a desired direction – but obviously this is pure guesswork. Suffice it to say that inter-substantial causation might be possible even if we do not understand how it works.

6. Conclusion

All in all, then, there seems to be a way to harmonize the traditional Christian doctrine of the Fall with a modern evolutionary outlook, at least as long as the accompanying notion of Eden is appropriately reinterpreted. The attempted harmonization, however, presupposes some kind of soul-body dualism. Trying to illuminate this nowadays not very fashionable idea, I have argued – or at least suggested – that there is still room in the world for the workings of characteristically rational souls: immaterial substances that are essentially directed, by divine ordination, towards

[25] Kim, 'Lonely Souls', p. 35.

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particular hominid bodies. For all I can see, this idea is yet to be confuted or made redundant by any scientific knowledge we currently possess.

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