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God surely is an “effect” and he therefore must have a cause. But this is a logical flaw, because the law of causality is only applicable within the category of things that come into existence. Since the God of the Bible is defined as to exist eternally, he could not have come into existence. And if something or someone exists and did not come into existence, he is not caused by anything. The cause of his existence must lie within himself. Because of such misunderstandings it is better to formulate the law of causality in this more “redundant” way: “Everything that comes into existence has a cause”. The law of causality refers only to the category of events which come into existence. The God of the Bible does not belong to this category.

There is no violation known of the law of causality. Even the existence of randomness or free will is no violation, since randomness or free will concern only the tool for a result. So every free-will decision has a cause, namely the brain which performs it. Every random number has a cause, namely its “generator”. The methods may be unclear (e.g. free will), but the law of causality is never violated.

Another misunderstanding of the law of causality has to do with time. I will show later that this law is independent of time, it transcends space and time. Some people say that the law of causality is violated e.g. in quantum physics. But this is not the case as we’ll see later.

Last but not least, the fifth premise, namely that our contemporary science is the “best we have” and that it should be taken into account, is also very important. I will focus on this later on.

In the following I will try to draw conclusions from the former premises and compare theistic and naturalistic explanations for relevant phenomena.

II. The source of Logic

It is hard to find a naturalistic explanation for the existence of logic, since logic is something that undoubtedly exists but is not material. Platonists believe that logic is “out there” and humans fortunately can recognize it. In contrast, naturalists often believe that logic is only created by the human brain in order to be able to coordinate the events we are experiencing in our life. Therefore logic has “evolved”. Beside the fact that it is questionable what the survival advantages of mathematicians are, our physical universe seems to operate according to logic, independent of the existence of human beings. Even naturalists believe that the universe “obeyed” certain physical laws long before human brains existed. And these physical laws are logical ones. So the question “Where does logic come from?” is hard to answer since there seem to be only two possibilities: either logic exists from eternity or it came into existence. If it exists from eternity, then it is not caused (premise 4) and the question where it came from is not applicable. If logic *did* come into existence once, it must have been caused. But does the law of causality apply at all to or within a world without logic? Since all our descriptions are logical statements themselves, it seems to be a kind of an endless regress to ask these questions. So let’s deal with the evidence that is that logic *is* existing. (By the way, Christians have their explanation in John 1:1 – Logic is an attribute of God). The most important thing within logic is the notion of truth. Mathematicians start out by *defining* basic truths (see

e.g. Tarski’s definition of truth). These so-called axioms are premises which can not be proven true but which are evidently true (e.g. Euklid: “The whole is greater than its parts”). Tarski’s definition of truth (in fact he did not invent these laws but merely collected them) also includes the logical laws for the methods of mathematical proofs and inferring strategies. Mathematicians must not care if these truths are given by God or if they are the result of a 2/3-majority of a mathematicians’ congress. But they stick to them, no matter what. This is the reason why mathematical laws do not get out of time (in contrast to physical laws). Logic never fails. A friend of mine and advocate of eastern religions, who is a critic of our “western thinking”, once told me: “Everything exists with its opposite - this is the nature of perfection”. I answered him that if it is true that everything exists with its opposite then also does his statement. But the opposite of his statement is: “Not everything exists with its opposite”, which must be true also. My partner accused me of leading him into a trap and terminated the conversation.

Summary: Logic is true (of course!)

III. Excuse: The illogic of moral relativism

I once heard of a survey which says that over 60% of people do not believe in absolute truth. As a mathematician I am amazed by this result. I believe that 150 years ago almost 0% would believe such a thing (and nobody would have gotten the idea to conduct such a survey at that time). Within logic there is no such thing like “relative truth”. The belief in the absence of absolute truth is a logical impossibility because of this: Assume for a moment that there is no absolute truth. If there is no absolute truth, the statement itself (“There is no absolute truth”) is not absolute true, too. So it may be false. But in this case, its opposite is true: “There *is* absolute truth”. Hence we have inferred something with its opposite at the same time. The law of non-contradiction forces us to conclude that the original statement is self-contradictory and therefore false. So only its opposite can be true: There *is* absolute truth. A question for doubters: Is your existence an absolute truth?

This problem stands for an important characteristic of relativism: you end up very often with self-contradicting statements, which cannot logically be true. Consider e.g. a statement I once heard from a liberal activist: “Since there are no absolute moral values, you ought to tolerate the relative moral values of other cultures”. What sounds so nice is a logical flaw: The first part of the sentence presumes that no absolute moral values exist. In the second part, you “ought” to do something, namely tolerate other moral values. But this is already a moral value itself! If the request “You ought to tolerate” is not an absolute moral value (according to the premise of the sentence), it must be a relative one. But then its opposite must be tolerated too! Imagine a culture which does not tolerate the moral values of other cultures (such a culture can easily be found). According to the second part of the sentence you ought to tolerate this intolerance, which is a direct contradiction to the statement. And if “ought to” is not a moral absolute, why should I “ought”? So the self-contradiction here is the demand to tolerate, which is an implicit presumed absolute and at the same time the statement says that there are no

moral absolutes. To avoid such self-contradictions, you only can assume that there are absolute moral values! This is the only logically consistent way. Otherwise you never could use words like “it is better if...” or “you should...” etc. accurately, because if moral values are relative then these words can only express personal opinions and can not be imposed on other people. An atheist recently said to me that there could be no “good” God because of all the evil in the world. But since my atheistic friend does not believe in moral absolutes, why is something really evil at all? It may be my friend’s opinion that certain things *he* thinks are evil, but without an absolute reference point, why should God consider these things as evil, too? Why impose my own standards on God? Again, the admittance of the existence of evil in the world implies that there is an absolute measure for it.

Some object that a statement like “You are beautiful” is only relatively true since this is a matter of opinion. But this is not so, because if two people would agree what the meaning of the word “beautiful” is, e.g. with the help of a long list which defines this word, they surely would also agree about what is beautiful. So this “relativism” is only lack of agreement concerning semantics. They simply don’t mean the same thing when talking about “beautiful” things.

Last but not least, there are logical inconsistencies with moral relativism like these: Moral relativists proclaim that they are inclusive and non-partisan. This of course is also a self-contradictory statement because they exclude the party of moral objectivists.

Summary: *Moral relativism is self-destructive, while moral objectivism is logically consistent. There are only absolute truths.*

IV. Quantum Physics and the law of causality

With the development of quantum physics a lot changed. Physical dualism was wrongly applied to philosophy and justifies post-modernism. Some even proclaim that the law of causality is violated. So let’s try to straighten this out. First of all, physical theories always are made of three things: (1) physical presuppositions, (2) mathematical descriptions and (3) logical/physical conclusions. If we assume that no mathematical errors were made, physical theories are wrong only when the presuppositions are wrong. And these presuppositions are based on observable data. If we assume further that the data are measured accurately, then we have two “unchangeable” components in physics: Data and logic (mathematics). These two things are always accurate. How does it happen then that sometimes physical theories go wrong? This is because of additional presuppositions that are added to the measured data. Newton’s law of gravity for example was based on accurate measures and accurate mathematics. But Newton assumed in addition that space and time are absolute (he had no chance of detecting otherwise at that time). Einstein used the same data and the same mathematics, but *his* additional presumption was that space and time are not absolute. This led to his famous theory of relativity.

Quantum physics is a mathematical theory which most accurately describes measurements concerning small particles. Since our every-day experiences normally do not recognize quantum-effects, our “common sense” views the results of quantum physics as very strange. And here is the point where the law of causality comes in. Our premise no. 4 says nothing about the order of cause and effect. Our common experience is that first comes the cause, later the effect. But this is not always so. Allan Aspect showed experimentally that cause and effect can occur exactly at the

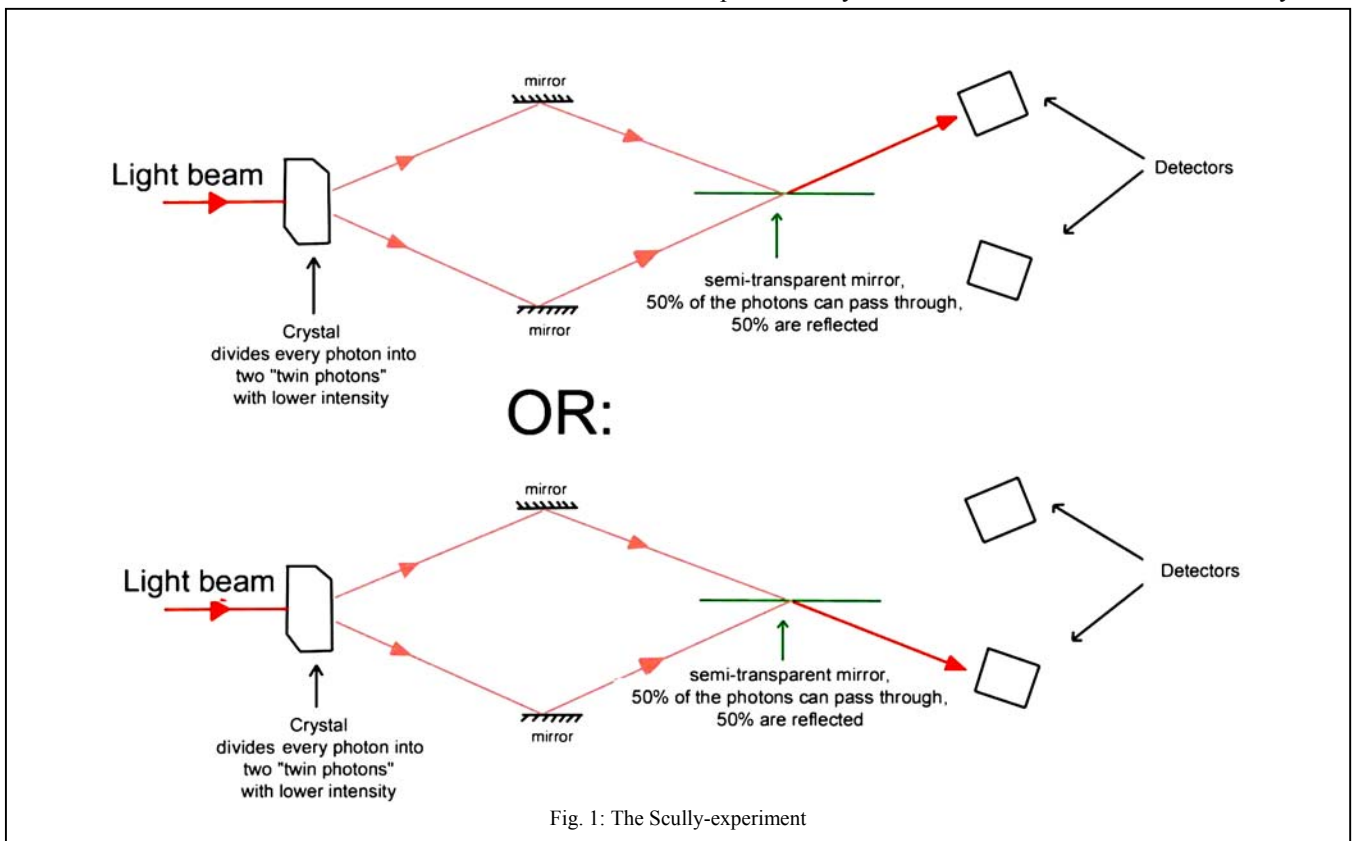


Fig. 1: The Scully-experiment

same time³. He produced two so-called "Twin-Particles", which are physically "entangled", i.e. they have certain common characteristics and are indistinguishable. Aspect directed these two particles in opposite directions, and the manipulation of one of the particles had instant effects on the other one, without any time-delay. So here we have cause and effect with no time-loss and independent of space. The quantum physicist Marlan Scully went even further. He proposed an experiment⁴ that was carried out later, which showed that even the order of past and present can be changed for cause and effect.

I want to give a rough overview here of the Scully experiment, to show how important its results are.

A light beam enters a crystal, which divides every photon in two so called "twin-photons" with lower intensity (see fig. 1). The twin photons are directed in separate directions, each of them reflected by a mirror and later "united" by a semi-transparent mirror (50% of the photons can pass through, the other 50% are completely reflected and therefore cannot pass through). Behind this mirror there are two detectors, able to register each photon.

Scully's arrangement of the components is made so that the twin-photons unite in a way, that at one time one of the twin photons is reflected and the other one passes through the semi-transparent mirror or vice versa. In either case, as a result, a reunited, "whole" photon (with the original intensity) is detected either at the upper or at the lower detector.

This represents the "wave-behavior" of photons and the effect is called "interference".

Now the researchers were interested in finding out which one of the two twin-photons took which way before they were reunited at the semi-transparent mirror. Therefore they "marked" one of the twin photons with a so-called polarization filter (see fig. 2). This is an optical device, which "twists" the photon-beam a little bit. In doing so, the photons "feel" observed and therefore their wave-behavior is destroyed. Suddenly there are not only "united" photons detected, but also "single" twin photons at the upper and the lower detector at the same time.

But what happens, if two other polarization filters are set up directly in front of the detectors, which are adjusted in such a way that "behind them" the information of which photon is marked (i.e. polarized), is deleted? (See fig. 3).

Here is the amazing result: since the information has been destroyed (concerning *which* photon went which way) the photons no longer "feel" observed and therefore as in the "undisturbed" experiment (without any polarization filters) there are only reunited twin photons detected, **either** at the upper **or** at the lower detector. So, the twin photons unite once again at the semi-transparent mirror in such a way, that either the one twin photon is reflected and the other one passes through or vice versa.

But wait a minute - how could the two twin-photons know that **behind** the semi-transparent mirror (this means **later** in time) a device is waiting, which destroys the information of the first polarization filter and that for this reason the twin photons reunite at the semi-transparent mirror? Can the photons foresee the future? Or does our measurement (i.e. observation) influence the past? If there is an independent reality "out there" (this means, independent from the observer), how could these results be explained? In fact, they couldn't! At least, with no "reasonable" explanations.

Still some scientists tried to do this, for instance, by declaring the existence of so-called "parallel-universes" which all exist at the same time and are often very similar to our universe. In this model (founded by Hugh Everett in 1957), according to our experiment, there are (at least) two universes; one, where at the semi-transparent mirror the twin-photons are reunited and take the upper *or* lower way, and one where they stay separated and take both ways. So both universes are supposed to have a true reality and at the moment, when we "look" at the result of our experiment, we decide which of the two universes we are "slipping" into (the one with the appropriate past).

But a lot of scientists feel, it is unscientific, to invent objects (like multi-universes) *ad hoc*, which could never be directly observed, only for the purpose to justify a physical model or to explain results of an experiment. Another group of scientists hope, one day, to find so-called "hidden

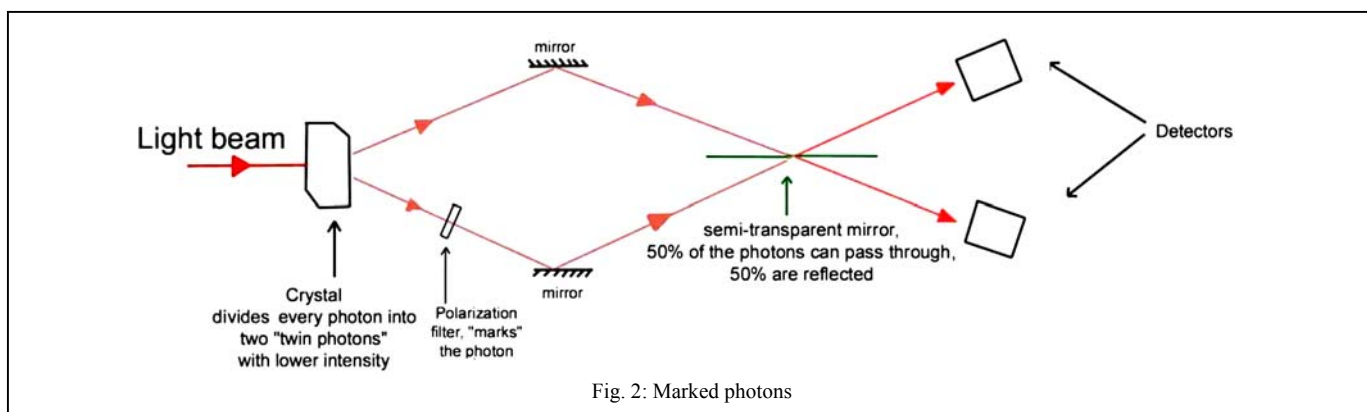


Fig. 2: Marked photons

³ Aspect, A. et. all in: "Physical Review Letters" (Vol. 49, p. 91) 1982

⁴ see Zöller-Greer, P. in: "Perspectives On Science And Christian Faith" (Vol. 52, No. 1, p.8ff) 2000

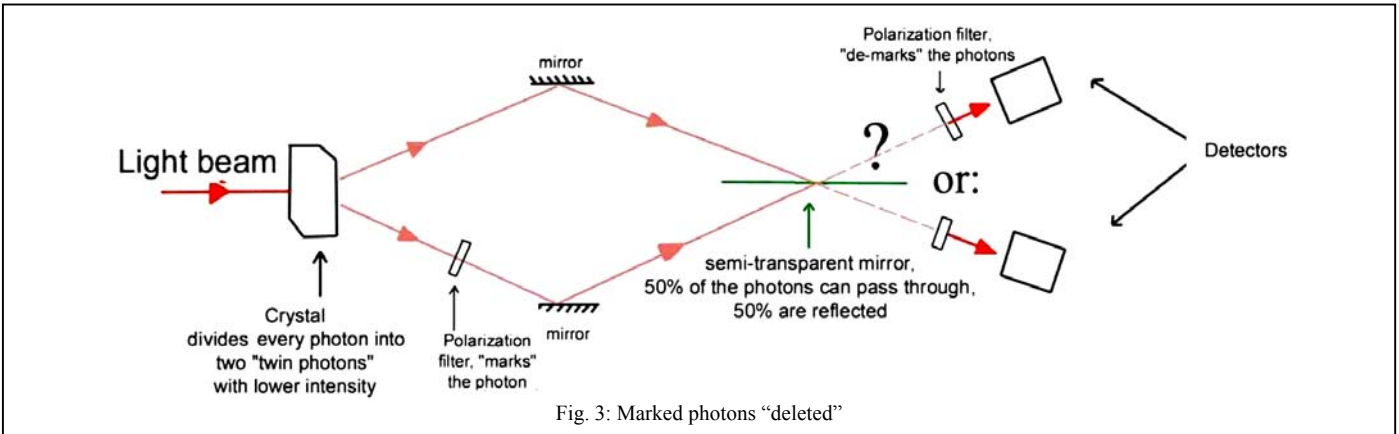


Fig. 3: Marked photons "deleted"

variables" which will connect the observed photons registered at the detectors with the twin photons, which are supposed to unite "in the past" at the semi-transparent mirror. The problem with this is that in the whole realm of physics there is not one single example (up to now) of variables, which can "influence" an event in the past from the present. This, too, seems a very "artificial" way, and again, it is only justified by the purpose to explain the results of the Scully-experiment.

Another point is the "observer-chain". The who-observes-who-problem leads to an infinite regress. In this case, some scientists conclude, that there *has* to be an observer "outside" the universe, because otherwise the problem of how a universe could exist without an observer is unsolvable. Guess who this outside-the-universe-observer could be!

Now, a critic could say, well, the time-span between the semi-transparent mirror and the detectors is so short, that the influence into the past can be ignored⁵. But, this is no real argument, because the Scully-experiment can be "stretched" to cosmic dimensions!

Indeed, there is fortunately, a cosmic constellation, which destroys this argument⁶:

A so-called "quasar", a pulsating light source, which is "hidden" behind a big galaxy, is visible on earth by "bending" its light around the galaxy, billions of light years away (see fig. 4). This is possible, because according to Einstein's theory of relativity, a large mass (like a galaxy) could work as a gravitational lens and therefore bend the light around itself. So the light of the pulsar is "doubled" by the gravitational lens, i.e.

one beam comes from the right side of the galaxy to us, and the other beam comes from the other side. This is similar to our twin-photons in the Scully-experiment.

Without going into too much detail: on the earth an experiment can be made in such a way that it determines, if one photon comes along **either** the right or the left side **or** if it comes along both sides of the gravitational lens at the same time. But how could the photons have known billions of years ago that someday there would be an earth with inhabitants on it, making just this experiment? Or do we "influence" the past "out there" billions of years ago through our observations here in the present? Hardly imaginable! In addition, let's assume, that different scientists perform two experiments of this kind at the same time here on the earth. One experiment is arranged in such a manner that the light beams pass both sides of the gravitational lens and the other experiment "forces" the beams to pass either on the one side or the other. So what follows? Are there two different pasts for each observer at the same time? This *is* BIG TROUBLE for the multi-universe-theory as well as for the "hidden-variables" approach.

Let it be remarked, that the older experiment of Alain Aspect was similar; but the question there was not if an observation could "influence" the past, but if the observation of one of the two twin-photons could influence the other one through space instantly even at a great distance. The result was that they could with no time loss! But this contradicts Einstein's special theory of relativity, where the speed of light is the absolute speed-barrier. While here some scientist's hope of ghostly "hidden" variables, which

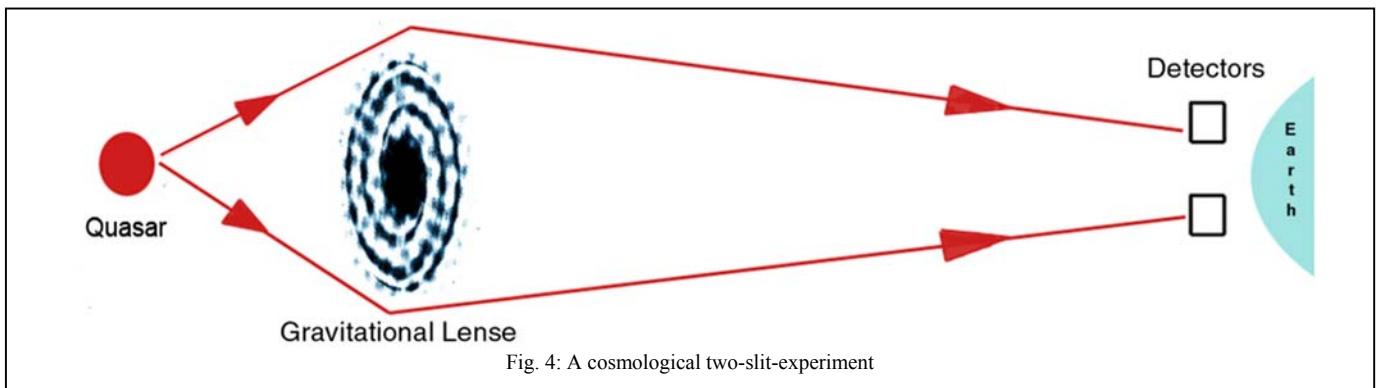


Fig. 4: A cosmological two-slit-experiment

⁵ Ross, H. in: The Creation Hypothesis, (p. 158) InterVarsity Press (J.P.Moreland, ed.) 1994

⁶ Horgan, J. in: Spektrum der Wissenschaft (Vol. 9, p. 82) 1992 and Musser, G. in: Scientific American (Vol. 4,

are capable of instantly transporting information from one photon to the other, was understandable, the existence of variables, which can transport information back in time, seems ridiculous. So it's no wonder, that these scientists now feel a certain angst because of the possible loss of their weltbild.

Some may say that quantum physics, with all its strange results, doesn't matter in the macroscopic world, since all the problems described above deal only with elementary particles. And indeed, in the macroscopic world we don't seem to have the problems mentioned here. But this is not *really* so. First, everything in our universe is made out of such elementary particles. And secondly, quantum mechanics is not only applicable to elementary particles, quantum mechanics can also be accurately applied to macroscopic objects. A well-known example of the strange behavior even in our macroscopic world is given by "Schrödingers Cat"⁷. And further more, phenomena seem to exist in the macroscopic world, which are not explainable with classic physics. For instance, some physicists try to explain certain ESP-Phenomena with quantum physics⁸.

Others say, the conscious human is not crucial for the *reality*, because a photographic plate could substitute the observer. Of course, this is no valid argument, because, as corresponding experiments show, the results come into being (reality) when the photographic plate is observed by a human being. So this is only another example for the already described "observer-chain", since the time-point of the observation is only delayed to the observation of the plate.

According to the results of the Scully-experiments, we now know, that reality (at least as we observe it) can be a "construct" of our interaction with it, i.e. no one could really say, what this reality "looks like" without our observation. And, as we've already seen, this even seems to be true for events that took place in a "past reality". So, what can we *really* say about any events of a past, which were not observed by any human being (i.e. before the existence of mankind)? We can only say, that our "reconstruction" of the past is an image, which obviously depends on our present observation of it. So the question: "what did the past *really* look like?" can not be answered accurately as long as no observer was there. Remember, that the Scully-experiment teaches us, that the past (of the photon's decision, "how" to unite at the semi-transparent mirror) was created during its observation in the present. But we also understand, that this reconstruction of the past leads us to more than one possibility. The past's reality "happens" while it is being observed in the present, and the kind of observation even determines, what the past looked like.

If one has seen the famous movie "Gone With the Wind", then she knows, which events took place. At first, there was the announcement of the civil war, then there was the war with all its destruction, meanwhile there was a love story

⁷ Davies, P.C.W. and Brown, J.R. in: Der Geist im Atom, Insel Verlag (p. 41-44) 1993

⁸ Lucadou, W. von in: Experimentelle Untersuchungen zur Beeinflussbarkeit von stochastischen quantenphysikalischen Systemen durch den Beobachter, Haag + Herchen Verlag 1986

going on and after the war the famous "Frankly, my dear, I don't give a....." scene took place. But was this *really* the order of the filmed sequences? Of course not! As everybody knows the sequences were filmed in an order, which were suitable to logistic and organizational demands. If, for instance, a person is only to appear three times during the whole movie, lets say at the start, in the middle and somewhere towards the end, then it would be easier (especially if the actor is costing the movie company lots and lots of money!) if all of these scenes were filmed at one time, if this is possible. Later these sequences are inserted at the proper position in the movie, even if "years" lay in between (according to the plot).

Or let's take the TV-series "Star Trek" (the one with Kirk & Spock, etc.). After this series was on the air, there were book-authors, who "constructed" a matching past to the series and wrote e.g. about Spock's youth. So *in the present* a possible, "reasonable" *past* was created for Spock which lead to the "reality" of the stories of the series in a logical way. So this reconstruction could be called an "extrapolation" from the present into the past. However there could be more than one possibility for Spock's past which matches the TV-series! But remember, in *reality* (in the series) there was no "past" of Spock **at all**. And further Spock "exists" only, if someone looks at one or more of the Star Trek series or movies. Therefore, in a sense Spock exists only by observation, not in reality! And as we know from the movie "The Truman Show", even the reality of a "real" person could be a total fake.

Now, what do scientists do, when they are talking about a past, where boldly no man has gone before? They are talking about an extrapolation of the present (of mankind) with 3 possibilities:

1. The extrapolated past could have *really* happened this way
2. Another "reasonable" past could have happened
3. There was no *real* past at all (at least no kind of past that we can imagine)

The Scully-experiment is a so-called "delayed choice-experiment" and takes advantage of the fact that every particle in the universe is surrounded by a "cloud" of uncertainty in respect to time and space. Subtle arrangements of certain components on a work-bench result in a device, which produces an effect in the past caused by an event in the presence. Hence, we can have (1) cause *before* effect, (2) cause and effect at the *same* time, (3) cause *after* effect and (4) cause and effect independent of space. Evidently the law of causality transcends space and time (since the chronological order of cause and effect can be time-independent and independent from the distance).

This has nothing to do with determinism. As Stephen Hawking pointed out, quantum physics does not give up determinism, but does re-establish it⁹. Cause and effect is in place, but one cause can produce a given contingent of well-computable effects, and one of these effects is actualized in reality. Why (supposed) identical causes can produce different effects is not all clear. It may be that there is "true" randomness at work or that the causes were not

⁹ Hawking, Stephen: "Das Universum in der Nußschale", Hoffman und Campe, 2001, page 114ff.

really identical, since we cannot be 100% sure what really influences an experiment.

But what we must give up is a “clockwork-universe”, where one space-time-moment of the universe can determine the next in a unique way. All previous and all future states of the universe are “only” one of a contingent of (in principle mathematically calculable) possible states.

Summary: *The law of causality is a “meta-law”, i.e. it is independent of space and time*

V. Quantum physics and Infinity within the Universe – and what free will has to do with it

When quantum physics arose, more and more physical values turned out to be quantized. Matter, energy, light etc. – all have some kind of a “smallest” number possible, and every “lump” is a multitude of this number. Newest results indicate that even “empty” space, and also time, is quantized. The smallest part of empty space is about 10^{-33} cm “long” and the shortest moment in time lasts 10^{-45} seconds (Planck-length and – time). In school I once learned that irrational numbers do exist “in reality”, although they have an infinite number of different decimals, e.g. the square root of 2. The “proof” was the following:

Take an x-y-coordinate system and draw a line between the numbers “1” on the x- and the y-axis (see fig. 5).

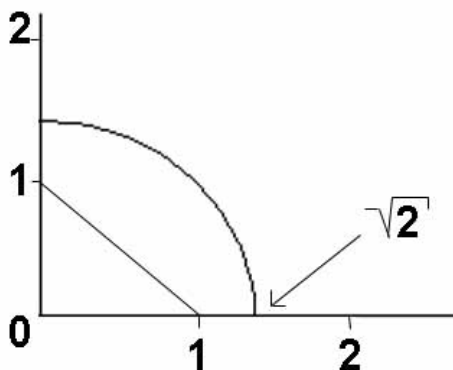


Fig. 5: The “reality” of an irrational number

Then use a divider with the length of the distance between the two 1’s and draw a circle around zero. The intersection with the x-axis (the real numbers) has the value of $\sqrt{2}$ and seems to exist in reality. But – since every piece of space is a multitude of the Planck-length, it is not really possible to adjust the divider so that you can reach a point “within” a Planck-length. Therefore you can never find the exact distance for $\sqrt{2}$ in reality! There is no “infinite small” space in reality. Space is no continuum. The same is true with time. The “flow of time” is more like a movie composed of many single frames, and the time-span between two frames is the Planck-time. There is also no infinity detectable on large scales. According to the Big Bang theory the universe is expanding, i.e. it is finite at any given point in time. We can speculate if the expansion is going on forever, but there is no evidence of that; we must wait “forever” to be sure...

Scully’s and Aspect’s experiments show that under special circumstances reality seems to be created while observing it. But things are not as easy like that. One must differentiate what the notion *reality* means. First of all, reality is connected with our cognition. Our cognition tells us something

about the reality we live in. This kind of reality I like to call the “physical reality”. All what we can measure and perceive belongs to this aspect of reality. The Copenhagen interpretation of quantum physics says, that this is the only reality physics can deal with and it makes no sense to talk about any other sort of reality. The reason for such a statement is that with quantum physics we find another kind of reality, which I would like to call a “mathematical reality”. Let’s take again for example Schrödinger’s famous cat. In this thought experiment the poor cat is caged in a closed box where some radioactive material is the trigger of a poisoning gas. The probability that the radiation activates the release of the gas may be 50%. If one describes this scenario with quantum physics, this leads to a mathematical equation, the so-called “Schrödinger equation”. The solution of this equation is called a wave function. It shows that the cat is 50% alive and 50% death *unless* no one “looks” at the cat. In this unobserved state the wave function is a “superposition” of two mathematical terms, where one term represents the living cat and the other the dead one. If the box is opened, the wave-function “collapses” and one of the two possible states becomes reality (either a dead cat or a living one). Mathematically this corresponds with the vanishing of the “death”- or “live”-term in the solution of the Schrödinger equation. But what should one make of the superposition of a 50%-alive and 50%-dead cat? According to human experience we always recognize either dead or living cats. The problem is that we can not observe this obscure half-alive-half-dead-cat, since our observation always goes along with the collapse of the wave function, and this means the cat comes out dead or alive. The problem with this “other” kind of (50/50-) reality is, that no one can say how it looks, since “looking” means destroying this kind of reality (collapse of the wave-function). But what we have is a mathematical description of this kind of reality and therefore I called it “mathematical reality”, since no one knows how it *really* looks like, although it can be mathematically described. According to the Copenhagen interpretation statements like “There is no reality below the Heisenberg Uncertainty Limit” always must be understood as: there is no *physical* reality in the sense of my definition above. But there remains what I named the *mathematical* reality, since the state of a quantum system could be described mathematically accurate. As I mentioned above, the problem is that no one can understand with “common sense” what kind of reality this should be. For to make an absolute statement like “there *is* really a reality below the Heisenberg Uncertainty Limit” or “there *is not* really a reality below the Heisenberg Uncertainty Limit” would presuppose that we were all-knowing God. So I prefer to state “there *is* a *mathematical* reality below the Heisenberg Uncertainty Limit” and what it *really* looks like - only God can say.

The application of what just was said I called the Divine Anthropic Principle¹⁰. Quantum physics tells us that the physical reality even of our past may depend on how we look at it at the present. Therefore extrapolations of a possible past before human observers exist is not as certain as

¹⁰ Zöller-Greer, P. in: “Perspectives On Science And Christian Faith” (Vol. 52, No. 1, p.8ff) 2000

it seems to be. We saw that theoretically a large number of different "pasts" is possible, which all could lead to the same "present" we are experiencing now. Of course, physics can accurately extrapolate and it does. But because of the mentioned ambiguity of possible pasts this may lead to different results, depending on the "tools" and theories used for the corresponding extrapolation. Let's illustrate this graphically. If we use any physical law, e.g. the law of entropy (horizontal axis, with a plotting scale so that entropy increases linear), we can demonstrate how large the extrapolation-zone is:

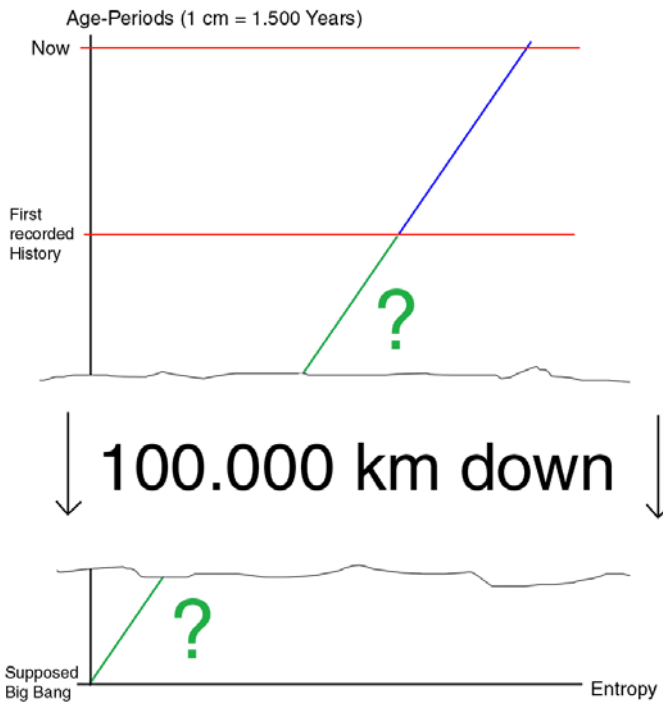


Fig. 6: The "far" past

In Fig. 6. 1 cm on the vertical axis equates with 1.500 years of time. We assume that the first *recorded* history appeared about 4,500 years ago (middle horizontal line). The lower part of the middle line must be extrapolated. And the relation is as follows: We have 3 cm of recorded history and over 100.000 km of (mathematical) extrapolation. We assume physics does this correctly, but another presupposition is (of course) that there **is** a *physical* reality "out there" where no man has gone before. On the other hand, the Scully experiments seem to show us that it is possible that how the past "looks like" depends on the methods we observe this past *today*. Therefore past before mankind at least in part may have the quality of a *mathematical* reality as mentioned above. But is this all we can say? Of course not. The chances are very good that most parts of our calculated past reality are actual real physical ones.

In order to understand this whole issue of an ambiguous past better, let me lay out an analogy (for theists this could be God's perspective, since the Bible tells us that God transcends space and time). It may also explain the role of the law of causality, which can be interpreted as a "geometric" property.

We saw that space and time seem to be quantized. Space is a set of little cubes of the size of the Planck-length, and time does not "flow" but "jump" like a set of movie-frames with

the Planck-time as time-span between two "frames". (By the way: The physicist H.W. Beck¹¹ has good arguments to locate our self-awareness –or call it soul if you like– between the Planck-lengths within our brain) Imagine we could take a snapshot of the whole universe at every Planck-time from the start to the end of the lifespan of the universe. This would result in a series of snapshots (a kind of "movie of the universe"), which even vary in size (since the universe expands). Let's assume they all lay on a big table with no special order. A little problem is the fact, that there are two kinds of reality, the physical one (which *really* happens) and the mathematical one (which we can't imagine with our common sense). The half-dead-half-living-cat is such a mathematical reality. As a "working"-model we can substitute such cases by thinking of a combination of *two possible alternative* physical realities instead only *one* half-dead-half-alive-reality (this is what the mathematical appearance of the corresponding terms suggests, where in one of these realities the cat is dead and in the other the cat is alive). In fact, Hugh Everett's "Many-World-Hypothesis" is based on such a conception, but the difference to our model is that Everett believed that these alternative "pasts" have a real physical reality somewhere. To me this is an *ad hoc* hypothesis and not acceptable as a physical theory. Therefore we are talking only of two *possible* physical realities, and they must not really "happen" somewhere out there. In this sense our "movie" of the universe has to be extended by other "possible" movies. These other movies incarnate the physical alternatives according to the mathematical realities as mentioned above.

To simplify matter we assume that the pictures of all the "real" and "possible" movies are lying separated on the table in the following fashion:

The pictures are lying on the table in such a way that all pictures of possible realities are forming one horizontal line. The next upper line is made of pictures of alternative realities, which we (as human beings) would experience as the next elementary time-unit. But remember: this "order" is only for the purpose of a simplified discussion and it is *not* a necessary one!

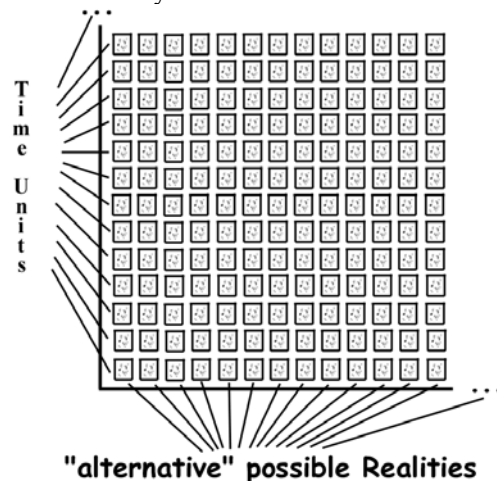


Fig. 7: Quantized space-time and alternative realities

¹¹ see e.g. Beck, Horst W.: „Können wir das Alter des Schöpfungkosmos erkunden?“ in Professorenforum-Journal Vol. 6, No. 2, 2005

In Fig. 7 we see the pictures lying on the table (the table would be very huge so we see only a very small outfit). Every little square in Fig. 7 is a "snapshot of the universe", which itself is composed of a large number of elementary space-cubes. The columns of Fig. 7 represent alternative realities and the lines represent different time-units. With the creation of physical laws the set of possible alternative realities is restricted. If we assume that the lines of pictures on the table are arranged in a way that from the bottom to the (far away) top every line represents events, which according to the introduced physical laws are conclusive from time-unit to time-unit, then e.g. the Big Bang must be one of the pictures of the bottom line. According to the Big Bang Theory the "first" line at the bottom is probably only one picture of the size of only one elementary cube. If we go further upwards, more and more pictures appear with increasing size (amounts of elementary cubes), since the universe expands. But for our further considerations this could be neglected. So when physics is there, the collection of possible alternative realities is restricted in every time-unit-line according to the laws physics and especially of quantum physics. Again only for simplifying matters we assume that such "belonging-together-realities" are lying next to each other:

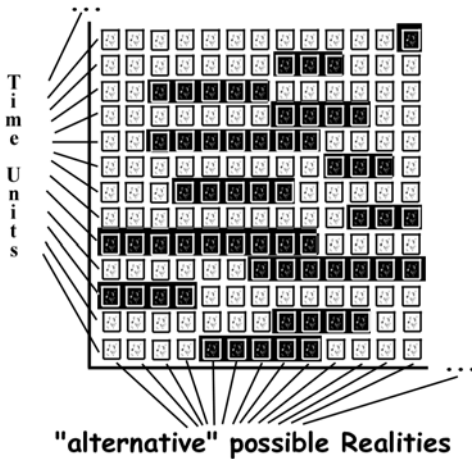


Fig. 8: "Associated" realities (darkened)

The blackened areas on the figure above represent *mathematical* reality. If we would go along with classical physics, the classical laws of physics would force one to represent the universe as a series of always only one such picture per line (see Fig. 9):

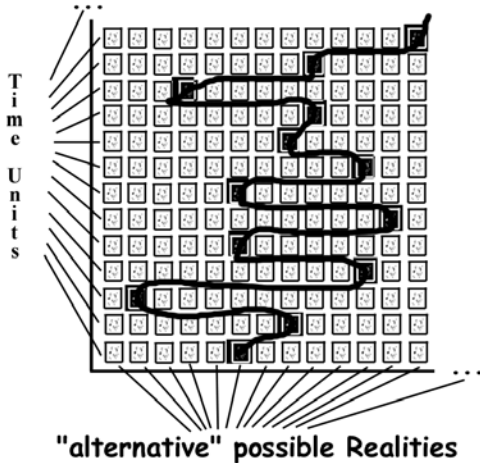


Fig. 9: "Classical" realities (darkened)

Let us call such a line a "path". Within classical physics there would exist only *one* such path. This is the idea of a clockwork-universe. This means, that with physical laws every state (picture) of the universe is fully determined by the physical laws and the preceding picture (where the quantization of space and time is not necessary, since the states of the universe were seen as continuous events). Of course, this leads to a regression where one only needs the first picture (e.g. the Big Bang) and the "right" physical law, which was called *Weltformel*. It was Einstein's dream to find this *Weltformel*. The idea was that in principle one could calculate all events in the Universe with this formula if one would know all the "input-parameters". God was seen as the designer of this "clock" and He only had to wind it up and He left it alone afterwards. But there arises a problem with free will. If the *Weltformel* predetermines *everything*, where is place for a free will? But quantum physics shows us a way out of this dilemma. Reality is no longer a predetermined unique path but a collection of possible paths (see Fig. 10).

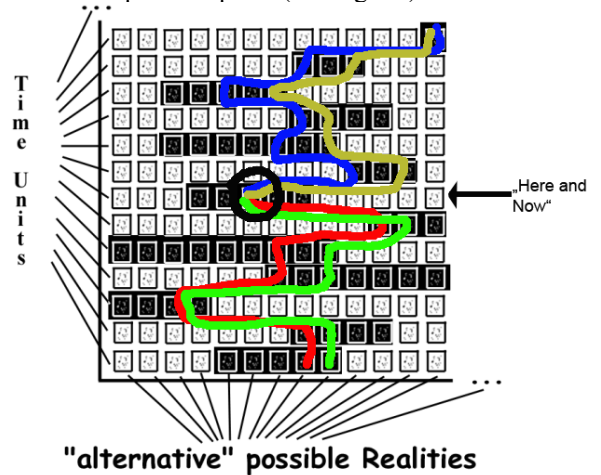


Fig. 10: "Quantum physical" alternative paths (colored)

In analogy to what we earlier called mathematical reality, we call this collection *mathematical paths*. But what then does correspond to physical reality, the *physical path*? In some odd way, the physical path is *not* physically predetermined, i.e. the complete path (from the actual time-unit in the present downward to the beginning of time) can change in dependence of some present and/or future events. Why? Because what *we* see is this: According to Scully's experiments it seems possible, that a special *past* path is created at that moment when we perform a certain experiment (like Scully's) in the *present*. Another drastic example is the cosmological two-slit-experiment as mentioned above (see Fig. 4): We choose *now* (through our free will by the observation-method in the present) how the *past* does look like! In Fig. 10 this is demonstrated by the red and green paths from present to past.

In accordance to the Copenhagen interpretation of quantum physics it makes no sense to ask: How did the *physical reality* look like in the past (when the light *really* passed the gravitational lens), since this physical past depends on the performance of the cosmological two-slit-experiment *today*. The *mathematical reality* of this past is described by a superposition of two possible past realities: One, where a photon passed the right or left side of the gravitational lens

(particle-behaviour) and the other one, where the photon passes both sides at the same time (wave-behaviour). Unless no one "looks" at the photon, these two possibilities are part of the quantum mechanical description of this problem. This is the *mathematical reality*. It represents a gigantic "cloud of probability" of two possibilities. If someone "looks" at the photons, then according to the adjustments of the experiment, the *mathematical reality* "collapses" and one of the two possibilities becomes *physical reality* (remember that this reality concerns the long ago past). Uncertain past collapses into certain past. This is why we sometimes say that the past is created in the present. But this is not exactly true. The past is not created (by us humans), but it's rather "chosen" out of the possible mathematical realities. In a way our free will (e.g. the decision to perform a Scully-like experiment) determines not only (at least parts of) our present and future (as everybody knows), it seems *also* to choose or to determine (at least parts of) our past (which is hard to comprehend by common sense). But the distinction of future and past is only within our human perspective, since we are bounded by time. In modification of the saying that our future is uncertain, we can say our past is also! Therefore from our perspective one of the several possible past paths becomes *the* (real) past path.

Thus the law of causality now gains a geometric nature. Like in the movie "Gone with the Wind" (as mentioned above) the series of sequences that determine the events in the movies are "cut" in the "right" order, although they may not be filmed in that order. The "geometry" of the frames clued together to a movie by the cutter determines what is causal while watching the movie. And maybe some filmed alternative sequences of a situation were discarded and (the best) one was eventually actualised. In the same way the "path" of causality in our life may be determined by the geometry (i.e. the order) of the snapshots on the table in Fig. 10. Humans are limited to change this order only according to their free will within the boundaries of mathematical reality. Free will plus mathematical reality lead to physical reality in accordance with the laws quantum physics.

A Theistic "Add-In":

In our model God can see all the pictures lying on His workbench. Since God is not bound by time, He sees all the pictures and events at the "same time". For Him, the notions "beginning" and "end" have a more geometric quality, since the beginning of our universe is associated with the bottom of the table and the end with the top. And somehow God also sees the final path! According to our (restricted) perspective this final path would be *the* real past we would see if we would look back from the very "last" time-unit of the existence of our universe (one of the pictures on the top-line of God's table). Then the entire Scully- and cosmological two-slit-experiments etc. are preformed and the past is finally determined. But until then the past is a kind of variable which may change (e.g. by future Scully-experiments). But not for God. He is "outside" of time and space and therefore "knows the end from the beginning" (Isaiah 46:10). This is clear, since all events lie stretched-out on His table. And not only this. He also "sees" what we called the final path "from the beginning".

Miracles

God is all-powerful and therefore He is able to intervene in our life. This means that He can modify the path of the universe by changing its way. Since He sees "all" possible paths He can intervene and "correct" the (final) path according to His plans (and perhaps our prayers etc.). To do so, He has the possibility to use a collection of "pictures" even "outside" the realm of what we called the mathematical reality. Or He could use power according to physics (in principle, one could physically "create" thousands of fish out of one or two by gathering molecules of air or sand and change their physical structure; the only problem is that one needs a huge amount of power and energy not feasible to produce by our human technology). Anyway it's His selection of pictures to modify and create the final path.

Free will

We saw in our analogy that free will is possible, since the past, the present and the future is always a *collection* of possible realities. We further saw that even the past may be influenced by our free will in the present. Nevertheless God sees the results of our decisions, since He sees the final path from the beginning (actually, there is no beginning for Him, since He is "outside" of time and the word "beginning" is a time-dependent notion). So there is no longer a conflict between a free will and an all-knowing God. In a way this is similar to the possibility of time traveling. If you would have a time machine and you could "jump" a year forward and then back again, you would *know* what will happen next year although this future world is a result of lots of free-will-decisions. Therefore to *know* the result of a free decision does not mean that there *is* no free decision. The seemingly contradiction between human's free will and God's predestination is therefore solved, see e.g. in Ephesians 1:5 (KJV): "*Having predestinated us unto the adoption of children by Jesus Christ to himself, according to the good pleasure of his will*".

Summary: *Infinity seems not to exist in physical reality; it is probably only a mathematical construct. And quantum physics helps to understand free will and the law of causality.*

VI. Quantum physics and the first cause problem

According to the Big Bang theory space and time (i.e. the universe and all that's in it) had a beginning about 13 billion years ago. We already established that *within* the universe everything that exists has a cause (since everything came into existence). But can the law of causality be extrapolated outside the universe? Since we found out earlier that the law of causality is a "meta-law" (i.e. it is independent of space and time), I would argue that there is no reason why the Big Bang is not also caused (since it undoubtedly came into existence). It seems that the universe was caused by something is at least the more plausible presupposition. But what caused it? There are only two possibilities: Either the cause was never caused itself (then this is the "first cause") or it was the result of another cause. We can produce a chain by asking again if the cause of the cause was also caused or not. Finally there are only two possibilities: Either the chain of causes stops somewhere at the first cause or there is an infinite regress of causes and effects.

Let's investigate carefully the two possibilities. We look at the latter possibility first.

Theorem:

A cause-effect-chain can only have a finite number of causes and effects, if time passes between cause and effect.

It is clear that an infinite number of even small time-amounts that pass between causes and effects would sum up to an infinite time-span, which ultimately avoids our being here now. To illustrate this, imagine a book-shelf with a start but no end (see fig. 11).

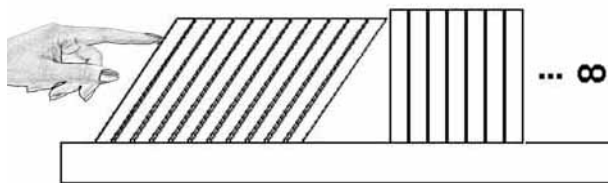


Fig. 11: A book-shelf with a start, but no end

If you push the first book (let's assume the beginning is at the left side) then a "domino-effect" takes place and a chain of falling-over takes place which never ends (ideal circumstances assumed). This chain of fallings never stops, since there is an infinite number of books and a small time-span between the fall of every book and its neighbor.

Now let's assume there is a shelf which mirrors the one described, i.e. the shelf is turned 180 degrees to the left. Now we have a book-shelf that reaches from infinity (at the left) and has an end at the right (see fig. 12).

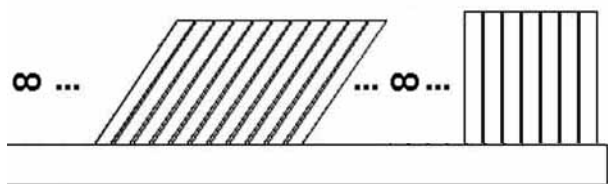


Fig. 12: A book-shelf with no start, but an end

If somehow the falling-over of the books was "started" at infinity on the left, when will the last book on the right fall down? Never, of course, since it would take the same time-span as in fig. 11, i.e. eternally. If the last book on the right represents our here-and-now in a cause-and-effect-chain, it would never be reached and you could never read this article. So if we have an infinite cause-and-effect-chain, an infinite number of causes and effects must take place simultaneously and only a finite number takes place with time. But if we look at the conditions necessary to have a simultaneous cause and effect, we find that this is only possible if the objects are in a quantum physical state of "entanglement" (like twin-photons). In terms of universes that caused each other simultaneously we would need "entangled universes", which is physically never shown possible, and we would need an "outside" cause to start the "de-entanglement"-process. This all seems very fantastic and it is highly questionable if this is logically and physically possible at all. The same is true for the reverse order of cause and effect in delayed-choice-experiments.

Another thing: We find physical infinity nowhere in our universe. Why in the world should we assume that there are

physically infinite processes outside the universe? This is pure speculation with no evidence anywhere.

So obviously we are "stuck" with the other case: The cause-and-effect-chain must be finite and therefore have a start.

Summary: *The existence of a first cause is the most plausible assumption, far more plausible than its opposite.*

VII. Logic and God

What is more plausible: The assumption that there is no God or the one that there is a God? I would clearly argue that we have more problems if there is no God. According to our premise 3 (Occam's razor), the existence of God is surely the simplest and logically most consistent explanation for our existence. Take e.g. the existence of moral absolutes. They couldn't have evolved, since they contradict the "survival of the fittest" (e.g. it is morally "good" to help handicapped people). So where do they come from? And the first cause was the most plausible explanation for our existence. But who or what is the first cause? Because the first cause is not created, it must exist from eternity. Since time and space and matter etc. came into existence with the big bang, this first cause must transcend time, space, and matter, and therefore must be spiritual. And if no time passes for this entity, how could it ever start a cause for anything (e.g. our universe)? A "deep frozen" timeless first cause would not cause anything else, how could it? A good explanation I think is the existence of a "will" of the first cause. But this means that the first cause is personal. And very intelligent (to create a universe like ours). If we look at the attributes above of the first cause, we'll find that the God of the Bible is an exact match. Together with other well-documented evidence (e.g. the historicity of the rising of Jesus Christ from the dead¹²), we have a compelling cumulative case for the existence of the Christian-Judaic God.

Almightiness

Since logic is one of the attributes of the God of the Bible, he can only do what is logically possible. Hence there are certain things God cannot do, e.g. he can not lie (see Titus 1:2). The existence of evil in the world has its reason in this, since God would have to become illogical to eliminate all evil (among other things this would clash with human's free will). Therefore God's almightiness must always be seen in the context of what is logically possible.

Miracles

Because logic is a non-violable attribute of God, all miracles must be logically possible. But this does not mean that they are also physically possible! As we saw, some events are simply physically impossible because they are very improbable. Take e.g. the resurrection of a dead person. This is not a violation of logic, but a violation of the 2nd law of thermodynamics. If the atoms of a long dead person are re-compounded again in a way that they resemble the once living person exactly, then the resurrection is accomplished.

¹² see e.g. Zöller-Greer, P.: „Zur Historizität der Auferstehung Jesus Christus“, in Professorenforum-Journal Vol 1, No.2

According to the 2nd law of thermodynamics this can not happen by normal natural processes, because the probability for such an event to happen “on its own” is far beyond $1:10^{40}$, which was the impossibility-boundary for events in physics. If it happens, however, we must assume that a non-natural power had intervened, and we call such a thing a miracle.

Summary: *The existence of the God of the Bible is the most plausible and rational explanation for our existence, life and redemption.*



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Pantheists in Spite of Themselves? God, Infinity, and three contemporary Theologians

by William Lane Craig

Christian theology has traditionally affirmed that God is infinite. But some contemporary theologians seem to think that this affirmation stands in tension with the Christian belief in the reality of a finite world distinct from God. These theologians exhibit an unsettling tendency toward monism, the view that all reality is one, namely, God, and, hence, toward pantheism. Although they may shrink from this conclusion and try to provide ways to avoid it, these escape routes may strike us as less than convincing, so that their rejection of pantheism represents merely a failure on their part to carry out their views to their logical conclusions.

The Monistic Argument

Although the roots of this tendency may be traced back to German idealism, its contemporary progenitor is Wolfhart Pannenberg, whose theology is deeply influenced by Hegel's metaphysics. Here, for example, is how the problematic comes to expression in Pannenberg:

In the concept of infinity freedom from limitation is not the primary point. Strictly, the infinite is not that which is without end but that which stands opposed to the finite, to what is defined by something else¹. . . the basic point in the concept of the Infinite is the antithesis to the finite as such. Hence the concept of the Infinite could become a description of the divine reality in distinction from everything finite . . .

Now *prima facie* this definition of the concept of the infinite does not seem to make sense. Pannenberg appears to say that the basic concept of the infinite is *that which stands opposed to the finite*, where the finite is understood as *what is defined by something else*. So on this account, the infinite is defined relationally with respect to the finite, in terms of the relation *stands opposed to*. But then it follows that the infinite is finite, which is a contradiction.

Similarly, in the attendant footnote, we are told that the finite is *that which is in distinction from something and is defined by the distinction*. Now as the "negation of the finite," the infinite must lack at least one of these properties of the finite, that is to say, either the infinite is not distinct from anything or the infinite is not defined by the distinction. But we have just seen that the infinite *is* defined by its distinction from the finite. The infinite is the opposite of the finite. It follows that the infinite must not, therefore, possess the first property of the finite, *being in distinction from something*. Therefore, the infinite and the finite cannot really be distinct; rather the infinite must be finite, which is a contradiction.

¹ Cf. Schleiermacher, *Christian Faith*, I, 56.2; and Hegel, *Science of Logic*, I, 1, ch. 2c, whose first simple definition is that the Infinite is the 'negation of the finite.' To be finite is to be in distinction from something and to be defined by the distinction. The relation of something to something else is an immanent definition of the something itself. From this fact Hegel derives his famous thesis that the Infinite is truly infinite only when it is not thought of merely as the opposite of the finite, for otherwise it would be seen as something in relation to something else and therefore as itself finite.¹

It might plausibly be thought that this apparent incoherence results largely from the English translator's glossing over some important distinctions. The word *bestimmen* (or *Bestimmung*) is used in at least two different senses in this passage.¹ It is first used in the semantic sense to mean "define," specifically to define a concept (*Begriff*). But, secondly, it is used in an ontic sense of "determine" or "render determinate." Concepts are defined; things are determined. Relational concepts are defined in terms of something else, but that does not imply that the thing falling under that concept is determined by the other thing. For example, *being taller*, *being larger*, or *being older* is each a relational concept; but that does not imply that a thing having such a property is determined in its height, size, or age by the thing to which it is compared. Pannenberg follows Schleiermacher in defining the concept of the infinite as "that which stands opposed to the finite" (*das dem endlichen entgegengesetzte*). But neither Schleiermacher nor Pannenberg need be understood to define the concept of the finite as "that which is defined by something else" but rather as "that which is determined by something else" (*das durch anderes mitbestimmte*). Thus, the fact that the basic point (*Grundbestimmung*) in the concept of the Infinite is its antithesis to the finite (*Gegensatz zum Endlichen*) does not imply that the infinite is determined by something else.

Similarly in the attendant footnote, "the negation of the finite" is the definition of the concept of the infinite (*Bestimmung des Begriffs des Unendlichen*). But a nuanced translation reveals that to be finite is not "to be in distinction from something and to be defined by the distinction"; rather it is to be in distinction from something (else) and to be constituted in the determination of its being through the distinction from something else (*etwas im Unterschied zu anderem sein, also auch in der Bestimmtheit seines Seins durch den Unterschied zu anderem konstituiert zu sein*). Thus, one is not absurdly claiming that because the concept of the infinite is defined relationally the infinite is therefore finite; for the infinite itself need not be determined in its being by the finite.

The problem with pinning this confusion on the translator, however, is that Pannenberg himself seems to endorse the Hegelian conclusion that "Insofar as the relation of something to something else is conceived as 'an immanent determination of the thing itself,' this thing is determined as

finite” (*Insofern das Verhältnis des Etwas zu Anderem als ‘immanente Bestimmung des Etwas selbst’ erfasst ist, ist dieses Etwas als Endliches bestimmt*).² Pannenberg here appears to endorse the notion that because the *concept* of the infinite is relationally defined therefore the infinite itself is determined in its being. The problem is that is not at all clear nor has any argument been given to think that we should consider a thing’s relation to something else to be an immanent determination of that thing; indeed, an “immanent determination” sounds like what we normally call an intrinsic property, in which case a relational property *cannot* be an immanent determination of the thing itself. It appears, then, that it is not the translator but Pannenberg himself who has conflated the two senses of *bestimmen*, and Bromiley has faithfully preserved this confusion of ideas in his translation. From the conclusion that anything standing in relation to something else is determined in its being and therefore finite, Hegel is said to develop his famous thesis that the true infinite is not to be thought of as merely the opposite of the finite, lest it be seen as itself something over against something else and therefore as finite (*nicht nur als Gegensatz zum Endlichen gedacht wird, weil es sonst selber als Etwas gegenüber Anderem und somit als endlich vorgestellt wird*). As Pannenberg notes, in Hegel’s thinking if the infinite were merely the opposite of the finite, it would stand in relation to something else and therefore be finite.³ Hegel sought to solve this perceived problem by distinguishing between the spurious infinite and the true infinite. He asserted, “The infinite as thus posited over against the finite, in a relation wherein they are as qualitatively distinct others, is to be called the *spurious infinite*. . . .”⁴ What Hegel called the “true infinite” he identified as the process of becoming which includes both the spurious infinite and the finite as moments.⁵ This is the ultimate reality. Because the finite and the infinite are ultimately One, there is no real opposition or distinction between them.

Now Pannenberg appears to endorse such reasoning. He says,

The Infinite that is merely a negation of the finite is not yet truly seen as the Infinite (as Hegel showed), for it is defined by delimitation from something else, i.e., the finite. Viewed in this way the Infinite is something in distinction from something else, and it is thus finite. The Infinite is truly infinite only when it transcends its own antithesis to the finite.⁶

Here Pannenberg seems to repeat the Hegelian argument and endorse Hegel’s escape from the looming contradiction. The argument as Pannenberg explains it seems to be something like the following:

1. The finite is that which is defined by its distinction from something else.
2. The infinite is defined as that which is not finite.
3. Therefore, the infinite is defined by its distinction from something else.
4. Therefore, the infinite is finite.

Since (4) is a logical contradiction, either (1) or (2) must be false. Pannenberg, following Hegel, seems to reject (2) in favor of something like

2’. The infinite is that which includes the finite.

No contradiction follows from (1) and (2’), since the infinite is not defined in terms of its distinction from something else. Indeed, given (2’), there just is nothing distinct from the infinite. Such an infinite is, in Hegel’s view, truly infinite.

Since the concept of the Infinite can be used as a description of divine reality, Pannenberg does not shy away from expressing his theological understanding of the God-world relation in the Hegelian language of Absolute Idealism:

The thought of the true Infinite means that the distinction between one thing and another cannot be applied unrestrictedly to God as the true Infinite. As the one who is not one among others, God must be absolute. As one, the Absolute is also all. Yet it is not all in one (pantheism) but transcends the difference of one and all.^{II} It is thus the One that also embraces all.

Pannenberg seems to be of two minds here. We are told that God cannot be distinct from any other thing and so is not one being among many. But we are left wondering as to the force of the qualifying word “unrestrictedly.” God, the Absolute, must be all, we are told, because He is not one among others. This seems undeniably monistic and, hence, pantheistic. But then we are told that such a view is not pantheism, since pantheism affirms all in one. But if God is one and is not one among others and God is all, then there can be no being distinct from Him. If pantheism were not true, there would have to exist something distinct from God and apart from all, which is incoherent. If God is all and God is One, and these affirmations are understood as identity statements, the transitivity of identity entails that all is one. So all must be in one, since all and one are identical. If we understand these affirmations, not as identity statements, but as predications, then God has the property of being everything there is and the only thing there is. Thus, any and everything that exists must exist “in” God.

Pannenberg asserts that God transcends the difference of one and all. This cannot mean that God transcends the categories of one and all, since He has been affirmed to be one and all. Nor can it mean that there is no difference between one and all with respect to God, since that is precisely what pantheism affirms. The reference to Plotinus is unelucidating, since for Plotinus the One is beyond being and therefore cannot even be said to exist. That is why the One is “not something.” If God does not exist, then nothing exists, since God is all. Moreover, God is affirmed to be “something,” which entails that He is not beyond being. To say that He is not merely something is not to negate this affirmation but to heighten it: God is at least something and more. The “more” seems to be everything: God is all there is. Such would be a reasonable interpretation of Pannenberg’s conclusion that God the Absolute embraces all. So there is a strong tendency toward monism in Pannenberg’s understanding of God as truly infinite.

Certain followers of Pannenberg seem to have ventured even further in the direction of monism. Here, for example,

^{II} For Plotinus, then, the one is no part of the all As such the absolute One is *apeiron*, not something. More precisely, as truly infinite, it is both something and not (merely) something.²

is how the argument from infinity appears in Philip Clayton:

... it turns out to be impossible to conceive of God as fully infinite if he is limited by something outside of himself. The infinite may without contradiction include within itself things that are by nature finite, but it may not stand *outside* of the finite. For if something finite exists, and if the infinite is 'excluded' by the finite, then it is not truly infinite or without limit. To put it differently, there is simply no place for finite things to 'be' outside of that which is *absolutely unlimited*. Hence, an infinite God must encompass the finite world that he has created, making it in some sense 'within' himself. This is the conclusion that we call panentheism.⁷

Though obviously inspired by Pannenberg, Clayton's argument takes as its point of departure what Pannenberg denied: that freedom from limitation is the primary meaning of the concept of infinity.⁸ To be truly infinite is to be absolutely unlimited. Clayton elsewhere explains,

Being limited or bounded (*begrenzt*) intuitively implies the idea of something that is *unbounded* or infinite. To think a something is to think at the same time the border that makes it this something rather than another. Beginning with finite things, our mind stretches toward the indefinite, whether it is indefinite in number, size, or quality. But to (try to) think the totality of things that are bordered leads to the idea of something that is beyond all borders, which Hegel calls the 'truly infinite.'⁹

This explanation helps us to understand why Clayton thinks that if the infinite exists "outside" the finite, then it is not truly infinite. For if the infinite is distinct from the finite, then there is a "border that makes it this something rather than another." There will be something which the finite is not and thus in this sense a limit to it. In this peculiar sense even a metaphysically necessary, self-existent being is limited in its existence by the presence of some metaphysically contingent, causally dependent being because it is *this* and not *that*. It follows that a truly infinite being must have no borders to its existence: nothing other than it can exist. Thus we are brought to the same conclusion toward which Pannenberg gravitated: there is nothing distinct from God. God is everything there is, which is pantheism.

Clayton's argument, then, is not infected by the confusion between "define" and "determine" that besets Pannenberg's version. Rather it appeals to the idea that the infinite must be absolutely unlimited. Clayton's reasoning can be formulated in terms of a conditional proof as follows:

1. God is infinite.
2. If something is infinite, it is absolutely unlimited.
3. If something is absolutely unlimited, it has no bounds.
4. If something is distinct from another thing, then that other thing bounds it.
5. If something is bounded by another thing, then it has bounds.
6. God is distinct from the world. (Premiss for Conditional Proof)
7. Therefore, the world bounds God (4, 6)
8. Therefore, God has bounds. (5, 7)
9. Therefore, God is not absolutely unlimited. (3, 8)
10. Therefore, God is not infinite. (2, 9)
11. Therefore, if God is distinct from the world, God is not infinite. (6-10, Cond. Proof)
12. Therefore, God is not distinct from the world. (1, 11)

This argument can be generalized to show that God is not distinct from anything else.

Even a few evangelical theologians seem to have been mesmerized by this sort of reasoning. For example, in explaining Pannenberg's doctrine of God, LeRon Shults opines,

... it is important to stress the importance of the 'true infinite' concept. Here we have a distinction that transcends yet embraces the distinction between God and the world. This special distinction has been emphasized by many theologians over the centuries, but recently it has been radically thematized. Robert Sokolowski describes it in this way: '(God plus the world) is not greater than God alone.' ... If the world and God together were 'more' than God alone, then we have something 'greater' than God,' namely, God and the world.¹⁰

This is not, in fact, Pannenberg's argument, though it is one rooted in the tradition of Absolute Idealism.¹¹ Shults's argument presupposes the Anselmian notion of God as the greatest conceivable being and claims that if God and the world are distinct entities, then there is some entity greater than God, which is impossible. Shults elsewhere expands on the assumption that God and the world together constitute some greater reality:

Often we imagine 'all that is' as divided into two generic kinds: divine and non-divine. This way of construing the distinction between Creator and creation succeeds in protecting against pantheism, but it easily leads us into the opposite problem: conceptualizing the relation between Infinity and finitude (or between Eternity and time) in terms of a simple dualism in which God and the world are two parts of a broader whole.

... If one conceptualizes the God-world relation in terms of two kinds of being (infinite and finite) that together compose 'All,' then this All replaces God as the Absolute. Both God and world become parts of the 'Whole'. ... this way of speaking is not consistent with the idea of God as the unlimited and unconditioned, but marks 'God' off as that part of the Whole that is limited (and so conditioned) by the finite.¹²

In this last remark we see how Shults's argument links up with Clayton's (and in fact Shults at this point footnotes Clayton's argument cited above). In Shults's view if God were an entity distinct from the world, then He would be just a part of a greater reality comprising God and the world and thus be limited by the world. Thus, one is led once again to deny that God and the world are distinct entities and, hence, to pantheistic monism.

We may formulate Shults's reasoning as follows:

1. God is the greatest conceivable being.
2. If God were an entity distinct from the world, then God and the world would be parts of a greater whole.
3. If God and the world were parts of a greater whole, then there would be something greater than God.
4. If there were something greater than God, then God would not be the greatest conceivable being.
5. Therefore, there is nothing greater than God. (1, 4)
6. Therefore, God and the world are not parts of a greater whole. (3, 5)
7. Therefore, God is not an entity distinct from the world. (2, 6)

Thus God, as the greatest conceivable being, a truly infinite being, must encompass all there is.

Escape from Monism

Now none of these three Christian theologians wants to be a pantheist, and so each tries to escape or reinterpret Hegelian monism so as to maintain Christian orthodoxy.

Pannenberg, despite his Hegelian proclivity towards monism, is clearly neither a pantheist nor a monist. Rather he reconstrues the antithesis of the infinite to the finite in such a way that they are reconcilable even as their distinctness is preserved. Simplifying, we may say that Pannenberg construes the antithesis between God and the universe as an almost literal sort of opposition, which is then overcome by some sort of relationship of God to the world which achieves reconciliation. In this reconciliation the distinctness of the *relata* is not dissolved. Pannenberg is fond of the word *aufgehoben* to characterize the opposition between God and the universe. The connotation is that the distinction at issue is not annulled but taken up to a higher level where the opposition is overcome even as the distinction is preserved. To give our own illustration, in marriage the antithesis of two persons is *aufgehoben*, as husband and wife come together in a deep unity even as their distinctness as persons is preserved. In the same way the opposition between infinite and finite, God and the world, is *aufgehoben* in that God is intimately related to the world in various ways even as the ontological distinctness between God and the world is preserved.

To see this worked out systematically, one should turn to Pannenberg's exposition of "The Infinity of God" in part 6 of the first volume of his *Systematic Theology*.¹³ There he expounds divine infinity in terms of God's attributes of holiness, eternity, omnipotence, and omnipresence. He takes the idea of holiness to be so closely linked to divine infinity that it is needed for its elucidation, while eternity, omnipotence, and omnipresence may be seen as "concrete manifestations" of God's infinity. Already it is noteworthy that God's existence is conspicuously absent from this analysis; there is no suggestion that God's existence is at odds with finite existence.

Pannenberg takes the basic point in the concept of the infinite to be the antithesis to the finite as such. As his exposition will bear out, we should place the emphasis here on the notion of the infinite as standing opposed to the finite. Pannenberg does not, in fact, think of the infinite as something that annuls or extinguishes the finite, for in order for the infinite to stand in opposition to the finite the distinction between the two must be real. If they were one, they could not stand opposed. "In this regard," says Pannenberg, "the concept of the Infinite links up especially with that of the holiness of God, for the basic meaning of holiness is separateness from everything profane."¹⁴ God's holiness threatens the profane world because of divine judgement; yet that same holiness goes beyond judgement to bring salvation. Pannenberg sees this motif of reconciliation overcoming opposition as the key to understanding divine infinity. He explains,

Thus the holiness of God both opposes the profane world and embraces it, bringing it into fellowship with the holy God. We see here a structural affinity between what the Bible says about the holiness of God and the concept of the true Infinite. The Infinite that is merely a negation of the finite is not yet truly seen as the Infinite (as Hegel showed), for it is defined by delimitation from something else, i.e., the finite. Viewed in this way the infinite is something in distinction from something else, and it is thus finite. The Infinite is truly infinite only when it transcends its own antithesis to the finite. In this sense the

holiness of God is truly infinite, for it is opposed to the profane, yet it also enters the profane world, penetrates it, and makes it holy. In the renewed world that is the target of eschatological hope the difference between God and creature will remain, but that between the holy and the profane will be totally abolished (Zech. 14.20-21).¹⁵

Pannenberg sees the same structure in the work of the Holy Spirit, who, as God, is opposed to the profane world and yet who sanctifies creatures by giving them fellowship with God. What we see here is that when Pannenberg speaks of the infinite's transcending its own antithesis to the finite, he is speaking in purely relational terms. The ontological difference between God and creatures is not abolished, but God and creatures come to be related in a special way. Pannenberg thus thinks that the problem posed by Hegel's monistic argument is met by emphasizing the relationality of God and the universe, which overcomes their opposition while preserving their distinctness. He says,

the abstract concept of the true Infinite . . . contains a paradox . . . It tells us that we have to think of the Infinite as negation, as the opposite of the finite, but also that it comprehends this antithesis in itself. But the abstract concept of the true Infinite does not show us how we can do this. The thought of the holiness of God and the understanding of the essence of God as Spirit bring us closer to a resolving of the contradiction. They express the fact that the transcendent God himself is characterized by a vital movement which causes him to invade what is different from himself and to give it a share in his own life. The biblical view of the divine Spirit in his creative and life-giving work also contains the thought that God gives existence to the finite as that which is different from himself, so that his holiness does not mean the abolition of the distinction between the finite and the infinite.¹⁶

Pannenberg sees the reconciliation of God and the world as the way in which the antithesis between finite and infinite can be overcome while preserving the difference or distinction between them.

His handling of eternity, omnipotence, and omnipresence is similar to his analysis of holiness. In each case, the antithesis to finite existence is overcome by postulating some relation between God and creatures. With respect to eternity, Pannenberg rejects the Platonic conception of an unqualified divine timelessness in favor of a doctrine of divine atemporality plus a relation to temporal things. Unfortunately Pannenberg does not explain how God can transcend time while sustaining relations with temporal beings or events—all he offers is non-explanatory appeals to Trinitarian theology without any real account of how the reconciliation is to be achieved. But the relational synthesis is isomorphic with divine holiness:

The thought of eternity that is not simply opposed to time but positively related to it, embracing it in its totality, offers a paradigmatic illustration and actualization of the structure of the true Infinite which is not just opposed to the finite but also embraces the antithesis. On the other hand the idea of a timeless eternity that is merely opposed to time corresponds to the improper infinite which in its opposition to the finite is defined by it and thereby shows itself to be finite.¹⁷

Just as the eternal does not abolish or obliterate time but is positively related to it, so the infinite's embracing the finite should be understood, not as swallowing it up, but as standing in some positive relationship to it.

With respect to omnipresence, Pannenberg sees an antithesis between God's immensity and creatures seemingly isolated from God, an opposition which is overcome by God's immediate presence to all things. "As in the case of his eternity, then, there are combined in his omnipresence elements of both immanence and transcendence in keeping with the criterion of the true Infinite."¹⁸ Again, Pannenberg seeks to explicate this transcendence and immanence of God in terms of Trinitarian theology, appealing (without, it must again be said, any account) to the consubstantiality and perichoresis of the three persons of the Godhead in order to explain the presence of the transcendent Father to believers through the Son and Spirit. The point to be emphasized is that once again we are dealing with purely relational concerns in overcoming the opposition of the infinite and the finite. "The trinitarian life of God in his economy of salvation proves to be the true infinity of his omnipresence."¹⁹

Finally, with respect to omnipotence, that God is omnipotent means, according to Pannenberg, that God's power is as unlimited as his omnipresence and eternity. As such it stands opposed to creatures. But that cannot be the whole story, if omnipotence is a manifestation of God's true infinity.

Omnipotence rules absolutely, and what is ruled by it is at the mercy of its whim. This one-sided view of omnipotence which sets that which rules in opposition to that which is ruled misses the true concept of omnipotence . . . As Creator, God wills the existence of his creatures. Hence, his omnipotence cannot be totally opposed to them if he is to be identical with himself in his acts and to show himself therein to be the one God.²⁰

The omnipotent God therefore allows creatures to exist which have a measure of autonomy: "they can achieve an independent existence which is distinct from God and yet stay related to the origin of their life."²¹ Once again we see that the overcoming of the alleged antithesis between infinite and finite is accomplished relationally, in such a way that the distinction of each is preserved.

God's holiness, eternity, omnipresence, and omnipotence are the concrete ways in which God is infinite. None of them, on Pannenberg's view, abolishes the ontological distinction between creature and Creator. So when Pannenberg comes to discuss the unity of God and says that "The thought of the true Infinite means that the distinction between one thing and another cannot be applied unrestrictedly to God as the true Infinite,"²² the force of the word "unrestrictedly" is that while God is distinct from other things He must also stand in relation to them. When Pannenberg says that God "transcends the difference between one and all" and is "the One that also embraces all," he is speaking loosely of the various relationships in which God as concretely infinite stands to His creatures, affirmatively embracing them just as a husband embraces his wife.

So God's unity is not a matter of ontological unity with the world but God's being united to the world in relationship.

By the unity of reconciliation by love which embraces the world and bridges the gulf between God and the world, the unity of God himself is realized in relation to the world . . . By the love which manifests itself in his revelatory action God's unity is constituted the unity of the true Infinite which transcends the antithesis to what is distinct from it.²³

Here the infinite's transcending the antithesis to distinct entities is accomplished by love, which bridges the gulf between

God and the world. The ontological distinctness between God and the world is not annulled, but affirmed, on pain of reducing God's love of the world to self-love. Notice how Pannenberg affirms with respect to God's infinite attributes the ontological distinctness of God and the universe:

Only the doctrine of the Trinity permits us so to unite God's *transcendence* as Father and his *immanence* in and with his creatures through Son and Spirit that the *permanent distinction* between God and creature is upheld. The same holds good for an understanding of God's *omnipotence*. The power of God over his creation as the transcendent Father finds completion only through the work of the Son and Spirit because only thus is it freed from the one-sided antithesis of the one who determines and that which is determined . . . The same holds good also for an understanding of God's *eternity*. The incarnation of the Son sets aside the antithesis of eternity and time as the present of the Father . . . is present to us through the Son . . . the removal of the antithesis of eternity and time in the economy of God's saving action according to the wisdom of his love is the reconciliation of the antithesis between Creator and creature.²⁴

The overcoming of the perceived antithesis between the infinite God and the finite world is thus achieved, not by blurring the distinction between them, but by seeing them as existing in a loving relationship. Pannenberg sums up:

The same holds good finally for an understanding of the basic statement of God's infinity. The thought of the true Infinite, which demands that we do not think of the infinite and the finite as a mere antithesis but also think of the unity that transcends the antithesis, poses first a mere challenge, an intellectual task which seems at first glance to involve a paradox. In the abstractly logical form of the question there appears to be no way of showing how we can combine the unity of the infinite and the finite in a single thought without expunging the difference between them
. . . divine love in its trinitarian concreteness . . . embraces the tension of the infinite and the finite without setting aside their distinction. It is the unity of God with his creature which is grounded in the fact that the divine love eternally affirms the creature in its distinctiveness and thus sets aside its *separation* from God but not its *difference* from Him.²⁵

That last phrase encapsulates Pannenberg's solution to the problem of the infinite and finite: God's love overcomes the world's estrangement from Him while affirming its ontological distinctness.

Pannenberg, then, eschews both pantheism and monism. All this Hegelian talk about the antithesis of the infinite to the finite, the infinite's embracing the finite, God's not being unrestrictedly distinct from other things, and so on, is just fancy window dressing for the traditional doctrine of creation, which affirms God's distinctness from the universe and His relatedness to it.

But very little reflection is needed to realize that Pannenberg has greatly underestimated the force of the Hegelian argument. His affirmations of God's being related to the world while remaining distinct from it display Pannenberg's orthodoxy (despite his use of rather unorthodox language), but they do nothing to refute the argument for monism. Pannenberg, it will be recalled, seeks to avoid the contradiction that the infinite is finite by rejecting

2. The infinite is defined as that which is not finite in favor of

2'. The infinite is that which includes the finite.

But (2') appears to be monistic. In order to avoid that conclusion Pannenberg interprets words like "includes" (e.g., "embraces," "transcends the antithesis to," "removes the antithesis between," and so on) to have the force "is positively related to." The perceived antithesis of God to the world is a sort of antagonism which is removed by God's being related to the world in affirming ways. The ontological distinctness between God and the world is actually presupposed by, rather than undermined by, such relatedness. But if this is all that is meant by God's (or the truly infinite's) inclusion of the world (or the finite), then (2') is just impotent to resolve the original contradiction. For Pannenberg is still thinking of God or the infinite as something that is distinct from the world or the finite. So what he means by (2') may be more accurately expressed as

2''. The (truly) infinite is that which is distinct from the finite but positively related to it.

But in that case the infinite is still being defined in terms of its distinction from something else and therefore, according to premiss (1) of his argument, is still finite. (In one sense, this whole line of reasoning is sloppy and confused, since, as we have said, *words* or *concepts* are defined, not *things*, but to the extent that we accept for the sake of argument the original premisses, it remains the case that the infinite is "defined" by its distinction from the finite.²⁶) One cannot avoid the infinite's being relationally defined by merely piling on more relations, like *being temporally related to*, *being present to*, and so on, in line with the concrete ways in which God is supposed to be truly infinite. If we let "*R*" stand for any of the special relations in which the infinite God is said to stand to the finite world, then on Pannenberg's view, God is infinite =_{def.} God *R* the world. But then God's infinity is defined in terms of something else, that to which He stands in the relation *R*. So it follows from premiss (1) of the argument that God is finite. Therefore, Pannenberg has not avoided the contradiction that impelled Hegel to a monistic understanding of (2') in terms of ontological inclusion.

It is hard to understand how Pannenberg could have thought that by positing additional, positive relations of God to the world, he had thereby overcome Hegel's contradiction. It seems that he took the antithesis involved to be an almost literal sort of opposition or antagonism which could then be overcome by positing some positive relations. But the antithesis involved here is of a conceptual and ontological sort: the infinite is defined as the not-finite and so an infinite being is one that is distinct from every finite being. Postulating further relations between them has no effect on this fundamental antithesis.

Clayton also tries to avoid pantheism. He proposes that we adopt panentheism instead as a way of affirming God's true infinity. Such nomenclature is misleading, however, for panentheism is typically taken to be the view that the world is partially constitutive of the divine being, that is to say, the world is a proper part of God. But Clayton, despite some incautious statements that "we are 'composed' out of him who is Being itself",²⁷ explicitly affirms that the world is ontologically distinct from God, having been created *ex nihilo* at a point in the finite past and subsequently conserved in being by God.²⁸ What, then, does Clayton mean when he

calls his view "panentheistic"? He means that the universe is literally located in God.²⁹ At first blush this is reminiscent of Newton's view of divine immensity and absolute space. According to Newton infinite space is the physical by-product of God's omnipresence, and objects moving through space are actually moving through God, who is present throughout space.

But how can any such Newtonian view be compatible with Clayton's affirmations of *creatio ex nihilo* and his recognition that standard Big Bang cosmogony involves an absolute origin not just of matter and energy, but of physical space and time themselves at the initial cosmological singularity? Clayton's answer is that the divine space "transcends and encompasses physical space."³⁰ By this assertion Clayton seems to mean that God exists in an embedding hyper-space in which our 4-dimensional spacetime manifold exists. Moreover, Clayton affirms repeatedly that God literally existed temporally prior to the Big Bang singularity, at which physical time began.³¹ So there must be an embedding dimension of hyper-time as well. Clayton's view, then, is that God exists in a hyper-spacetime in which our 4-dimensional universe is located, a view very close to the thesis of God's "extra-dimensionality" popularized by the Christian apologist Hugh Ross. God is thus ontologically distinct from the world though the world exists in God.

Such a novel view of God's relation to the world is, however, once again simply irrelevant to the Hegelian argument for monism as Clayton formulated it. Recall that according to premiss (2) of Clayton's argument, anything that is infinite is absolutely unlimited. In premiss (3), being absolutely unlimited is explicated in terms of having no bounds. Clayton takes the notion of having bounds very radically: a bound or border is that which "makes a thing this something rather than another."³² Even bare identity conditions for an entity thus constitute bounds for that entity. So premiss (4) tells us that if anything is distinct from another thing, that other thing bounds it, and premiss (5) asserts the obvious, that if something is bounded by another thing, then it has bounds. Now since Clayton emphatically affirms that God and the world are not identical, but are ontologically distinct, it follows immediately that God is not infinite, since He is bounded by the world. Even if the world exists in God, the world remains as distinct from God as a bacterium in the stomach of a cow is distinct from that cow. Just as the cow is not a bacterium and so has a boundary to its existence set by that bacterium (and vice versa as well), so God is not the world and so has a boundary to His existence. It follows then that God is not absolutely unlimited (He is not the world) and therefore, according to the argument, is finite.

Again, it is bewildering that Clayton could have thought that by embedding the universe spatio-temporally in God he had done anything to remove the boundaries to God's existence. He seems to have been misled by his own naive language of the impossibility of the infinite's existing "outside of" the finite. He proposes to solve the problem by embedding the world "within" God.³³ This breezy solution completely fails to appreciate that the exteriority with which one is grappling is not spatial but ontological. Any being that is distinct from another is bounded by that other

on this analysis, regardless of where they happen to be spatio-temporally located. So even if God has the world inside of Him, He is bounded by the world in that He and the world are two different things. Being thus limited, God, on Clayton's proposal, remains finite.

Finally, LeRon Shults thinks to avoid monism by emphasizing God's relationality. He says,

After the (re)turn to relationality, the metaphysics of substance that forced the choice between pantheism (one substance) and dualism (two substances) was severely challenged. If the divine nature is truly Infinite, so that God embraces while transcending the distinction between infinite and finite, then finite creaturely sharing in this nature does not have to mean that the finite becomes (substantially) infinite, nor that the finite is a constitutive 'part' of the infinite, nor that God's nature is one (infinite) substance defined over against other (finite) substances.³⁴

Now despite his opening sentence, Shults does not, it seems, really mean to abandon a metaphysics of substance in favor of pure relationality. Such a metaphysics would appear absurd, since relations obtain between substances. Moreover, Shults goes on to speak approvingly of God's having a nature and later of things existing in relation to God. In any case, premiss (1) of Shults's argument, that God is the greatest conceivable being, itself affirms that God is a substance, a being, so that if this is denied, one cannot reach the conclusion (7), which, on this interpretation, Shults means to affirm, namely, that God is not an entity. So Shults does not mean to assert that there literally are no things. He errs in thinking that Christian theism affirms dualism, for in this context that would be to assert that there are only two substances, two things, in existence. Christian theism is committed to a plurality of substances. Moreover, Christian theism affirms that those substances, including God, stand in a wide variety of relations. So what does Shults mean by the (re)turn to relationality? He explains,

I suggest a terminological distinction between existing, participating, and sharing in the divine nature. Romans 11.36 tells us that *all things* are from, through, and to God. This means that to be creaturely is to *exist* in their dynamic movement in relation to God Human persons *participate* in a way that is qualitatively different than the experience of other creatures; self-conscious creatures experience a personal knowing, acting, and being as *becoming* I normally reserve the term *sharing* for the intensification of the religious relation to God, which Christians experience as the indwelling and transforming presence of the Spirit³⁵

This exposition is altogether innocuous and unremarkable. But is it also impotent to turn back the force of the monistic argument endorsed by Shults. According to premiss (2) of that argument, if God were a distinct entity from the world, then God and the world would be parts of a greater whole. Shults could avoid this conclusion by holding that there is no such entity, no such substance, as God. But that would be to affirm that there is no God, which Shults does not want to seem to do. Rather he wants to say that creatures, while distinct from God, share in the divine nature. But that sharing relation is then explicated in terms of an intensification of one's religious relation to God in Christian experience. As we saw with Pannenberg, the positing of such a relation does absolutely nothing to defeat any of the premises of the argument for monism which Shults endorsed. On Shults's view God's nature may not be one substance "over against" other

substances in the sense of antagonism or opposition, but it certainly is in the sense of ontological distinctness. So long as God is an entity (which Shults seems to affirm), it follows from Shults's argument that God cannot be distinct from but related to the world, as Shults wants to affirm, for then there would be something greater than God, namely, the entity comprising God and the world. So the world and God must be the same entity, which is to affirm pantheism.

In sum, these three Christian theologians have not been able to frame successful defeaters for the monistic and pantheistic conclusions of the Hegelian-style arguments they have endorsed. So long as they continue to endorse the premises of those arguments, they will be stuck with pantheism in spite of themselves.

Failure of the Monistic Argument

Fortunately, the Hegelian-style arguments offered by our three theologians are not at all compelling. In the first place, the premises of those arguments presuppose a concept of the infinite which is deeply flawed and even incoherent. About fifty years after Hegel's death, revolutionary developments in the concept of the infinite were taking place in mathematics, spearheaded by his compatriot Georg Cantor. Cantor also claimed on behalf of his concept of the infinite that it was the "true infinite," in contrast to the "improper infinite" which had prevailed up until that time.³⁶ Cantor's positive definition of the infinite soon swept through mathematics and lies at the foundations of modern set theory (which many mathematicians believe to be foundational for all of mathematics) and transfinite arithmetic.

Cantor differentiated between a potential infinite and an actual infinite. Up until his time the concept of infinity was purely a limit concept. Infinity serves as the ideal terminus of unceasing processes which ever more closely approach but never arrive at infinity. For example, the number of segments into which some distance could be divided exceeds any natural number; as the dividing goes on the number of segments approaches infinity. Aristotle had maintained that the infinite thus exists merely potentially but never actually. By contrast Cantor enunciated the concept of a quantity that is actually infinite. On Cantor's analysis, a collection is actually infinite if and only if it has a proper part which has the same number of elements or members as the whole collection. A proper part of a collection is a part which is not co-extensive with the whole collection; that is to say, there are members of the whole collection which are not members of the part. Two collections have the same number of members if and only if their members can be paired in a one-to-one correspondence. So, for example, on this analysis, the natural number series 0, 1, 2, 3, . . . is actually infinite, having a proper part (say, the odd numbers) which is numerically equivalent to the whole series.

0, 1, 2, 3,
 ↓ ↓ ↓ ↓
 1, 3, 5, 7,

On the other hand, a collection is finite if the number of members of the collection is some natural number n . Cantor's definitions completely subvert the Hegelian argument. For it is not true, as Pannenberg's version of Hegel's argument affirms, that

2. The infinite is defined as that which is not finite.

Cantor gave positive content to the concept of the infinite; it was not defined merely as the negation of the finite. Even apart from Cantor's analysis, the ineptness of (2) should have been evident anyway. The "not-finite" is no more synonymous with "infinite" than the "not-black" is synonymous with "white". The not-finite encompasses not only the actual infinite but also the potential infinite, as well as anything to which the category of quantity is inapplicable. For example, in the first case, the size of a geometrically closed but ever-expanding universe is potentially infinite and so cannot be equated with any finite number or any actually infinite number. As for the second case, while it is true that "The color blue is not finite" because the category of quantity is simply inapplicable, that is not to affirm the absurdity, "The color blue is infinite." Thus, the definition offered in (2) is clearly defective.

Neither, on Cantor's account, is it true, as Pannenberg suggests, that

2'. The infinite is that which includes the finite.

For (2'), on Cantor's definitions, is clearly false, for one can have infinite collections which have no members in common. So, for example, -2 is not included in the natural number series, despite the fact that that series is infinite.

Cantor's definitions also make it clear that Clayton's premises

2. If something is infinite, it is absolutely unlimited.

is false. The collection of natural numbers have a lower bound 0 but is nonetheless infinite. The series of fractions between 1 and 2 has both an upper and lower bound, namely, $2/1$ and $1/1$, but is for all that infinite. Thus, given Cantor's definitions, the crucial premises in the monistic arguments are false.

Of course, Pannenberg and Clayton will respond that the true infinite is not a mathematical but a metaphysical concept. Pannenberg differentiates between Hegel's "qualitative definition" of the infinite and the "quantitative mathematical definition."³⁷ He sees the former as more basic than the latter, for

freedom from limitation is a consequence of negation of the finite, and this freedom can have the form of unlimited progress in a finite series. The infinite series—including the indefinite sequence of finite magnitudes in space and time—actualizes the antithesis of the infinite and the finite only in a one-sided way, namely, by an unrestricted addition of finite steps.³⁸

This explanation makes it evident that Pannenberg is still thinking of the mathematical infinite in pre-Cantorian terms as a merely potential infinite. As we have seen, the concept of the actual infinite has nothing to do with the absence of

limits. This is the case even if, historically speaking, the idea of the actual infinite evolved out of reflection on the potential infinite and freedom from limits. The definition of the concept of actual infinity makes no reference to absence of limits and so is independent of that notion.

Now suppose we do distinguish between the mathematical (or quantitative) and the metaphysical (or qualitative) infinite (as, in fact, I think we should).³⁹ Two questions then present themselves. First, why think that the metaphysical infinite is privileged over the mathematical infinite as the concept of the "true infinite"? Why not think that the true infinite is the mathematical concept, and the qualitative idea just an analogical notion? Indeed, given the rigor and fecundity of Cantor's analysis in contrast to the imprecise, subjective, and poorly understood metaphysical concept, do we not have good grounds for elevating the mathematical concept to the status of the true infinite? At least there is no reason to make it play second fiddle to its metaphysical cousin.

Our theologians might plausibly reply that they are not privileging the metaphysical over the mathematical infinite so much as maintaining that mathematical or quantitative concepts are simply not at issue here, since one's concern is with God's infinity, and divine infinity is not a quantitative notion, having nothing to do with collections of definite and discrete members.

This reply seems quite correct. But then we come to the second question occasioned by the distinction between the mathematical and metaphysical infinite, namely, why think that the Hegelian concept of the metaphysical infinite is correct? Why think that Hegel has correctly understood the notion of the metaphysically infinite? Here we come to the heart of the issue, which is most clearly expressed in Clayton's

2. If something is (metaphysically) infinite, it is absolutely unlimited.

Why think that (2) is true? The intuition behind (2) seems to be that if something has any limits at all, then it is finite. Moreover, limits are understood here very loosely, so that even the existence of another entity constitutes a limit to a thing's existence. Although he denies that freedom from limitation is the primary concept of the infinite, such an understanding seems to be presupposed by Pannenberg's

1. The finite is that which is defined by its distinction from something else.

If something is distinct from something else, then that other thing constitutes a limit to its existence, revealing it to be finite. Similarly, one will recall, Shults thinks that conceiving of God and the world as substantially distinct is inconsistent with speaking of God as unlimited, but marks God off as that part of the whole which is limited by the finite.

So on this view, if it were the case that only God and the moon existed as distinct entities, then even if God is necessary, self-existent, omnipotent, omniscient, eternal, omnipresent, and so on with the rest of His superlative attributes, God is nonetheless finite because He is not the moon. That

is because the moon is a boundary to His existence and so limits God to being *this* thing but not *that* thing.

Now this understanding of “limit” has peculiar consequences. For, perversely, had God in this case not created the moon, then only God would exist and thus nothing would limit God’s existence, so that God would be infinite! In that case God would be all there is. But if He exercises His omnipotence and creates the moon *ex nihilo*, then He is not all there is. Even though God has undergone no intrinsic change whatsoever in His attributes, He is now a finite rather than an infinite being simply in virtue of the moon’s existence.

The above thought experiment suggests that our neo-Hegelians have confused “infinite” with “all.” If God and the moon exist, then God is not all there is, but it does not follow that He is not infinite. God is intrinsically the same with respect to His attributes whether the moon exists or not. So if we take Clayton’s (2) to mean

2’. If something is (metaphysically) infinite, it is all there is.

then this premiss is plausibly false. The infinite need not be absolutely unlimited in this sense.

Here we connect with Shults’s argument, which makes no explicit appeal to the metaphysical infinite but which also conflates “infinite” with “all.” We may agree with Shults that if God and the world were parts of a greater whole, there would be something greater than God. But why accept his

2. If God were an entity distinct from the world, then God and the world would be parts of a greater whole.

This premiss assumes a philosophical analysis of parthood which most philosophers would find incredible. Shults seems to think that for any two entities, their mereological sum constitutes a thing of which they are parts. But this seems fantastic. Do my left hand and the lamp on Shults’s desk constitute an object of which they are parts? The answer seems obviously, no. Ironically, Shults turns out to be a more radical substance metaphysician than those he criticizes, for he reifies such arbitrary sums into bona fide substances. He must take these sums to be real substances, otherwise his claim that God would no longer be the greatest conceivable being would be unjustified. So, if Shults is to defend (2), he needs to give some powerful argument for thinking that arbitrary mereological sums constitute objects or else show why in God’s special case the mereological sum of, say, God and the moon is an object of which God is a part. We all agree that if God and the moon exist, then God is not all there is; but it does not follow that there exists therefore some object of which God is a part.

To return, then, to Clayton’s (2), not only is there no good reason to accept (2) as true, but we have, moreover, good reason to reject it. For the concept of an absolutely unlimited being is incoherent. According to Clayton, a border or limit is that which makes a thing *this* thing rather than another. But that entails that even if God existed alone, in utter solitude, so that He was all there is, He would still be a limited being. For He would still have specific properties that make Him what He is rather than something else. God would still have limits to His being in that He is not, say, a mouse or the moon. Indeed, if God’s attributes are essential to Him, then God is necessarily limited in His existence to what He is.

Hence, for a being to be absolutely unlimited, there cannot be any predicates at all that are applicable to it.

But then incoherence immediately follows. For if nothing can be truly predicated of some being, then the predicate “being absolutely unlimited” cannot be truly predicated of that being. But then the statement

2. If something is (metaphysically) infinite, it is absolutely unlimited.

is false or truth valueless, which contradicts the hypothesis. To put the same point another way: if a being is absolutely unlimited, then it is *not* limited. Hence, there is a boundary to its existence; there is something it is not: it is not a limited being. An absolutely unlimited being *cannot* have any predicates—which is to posit a limit to its being.⁴⁰

Therefore, we have compelling reasons to reject Clayton’s (2), for the notion of an absolutely unlimited being, in the curious sense in which “limit” is being employed, is self-referentially incoherent. Hence, the understanding of the metaphysically infinite presupposed by our neo-Hegelian theologians must be rejected.

So what, then, do we mean when we affirm with Clayton that

1. God is infinite.

Here Pannenberg’s insight that God’s infinity has concrete manifestations provides the key. There really is no separate divine attribute denoted by “infinity.” Rather “infinity” serves as an umbrella-term for capturing all those properties which serve to make God the greatest conceivable being. In saying that God is infinite, we mean that God is necessary, self-existent, omnipotent, omniscient, holy, eternal, omnipresent, and so forth. Were we to abstract these properties from the concept of God, there would not remain some further, undefined property *infinity*. Rather God’s infinity is constituted precisely by these great-making properties. All of these properties have been given careful definitions by Christian philosophers in the analytic tradition, definitions which do not surreptitiously reintroduce the concept of infinity; but unfortunately the Christian theologians whom we have discussed in this essay evince little familiarity with this literature.⁴¹ This is greatly to be regretted, for these discussions in analytic philosophy of religion could have helped them to steer clear of the conceptual *Sackgasse* into which their reliance on Hegelian idealism has led them.

Conclusion

In conclusion, then, the idea that God is metaphysically infinite should not incline us towards monism. Neither should we think that the fact that a real world exists and God is not all there is implies that God is finite. If there were a tension between God’s infinity and the reality of the world, the mere postulation of relations of God to the world while preserving their ontological distinctness would avail for nothing. Nothing short of monistic illusionism would avert the contradiction. But there is no reason to think that God’s metaphysical infinity entails being absolutely unlimited in this radical sense. Indeed, such a notion is self-

referentially incoherent. Rather God's metaphysical infinity should be understood in terms of His superlative attributes which make Him a maximally great being.



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NOTES

¹ It is also used in the elided words in the sense of an "individual" (what Bertrand Russell called a "term"), when Pannenberg speaks of "unlimited progress in a finite series," or, literally, "unlimited progress in the series of finite individuals (*Bestimmungen*)."

² This is apparently the sentence translated by Bromiley as "The relation of something to something else is an immanent definition of the something itself."

³ Hegel says, "This contradiction occurs as a direct result of the circumstance that the finite remains as a determinate being opposed to the infinite, so that there are two determinatenesses; *there are two worlds, one infinite and one finite, and in their relationship the infinite is only the limit of the finite and is thus only a determinate infinite, an infinite which is itself finite*" (Georg Wilhelm Friedrich Hegel, *Hegel's Science of Logic*, translated by A. V. Miller [London: Allen & Unwin, 1969], Vol. 1, Bk. 1, Sect. 1, Chap. 2, Pt. B, Sub-pt. (c), par. 278).

⁴ *Ibid.*, par. 277.

⁵ *Ibid.*, par. 300.

⁶ Pannenberg, *Systematic Theology*, 1: 400.

⁷ Philip Clayton, *God and Contemporary Science* (Grand Rapids, Mich.: William B. Eerdmans, 1997), p. . Cf. his endorsement of the argument in "Panentheism in Metaphysical and Scientific Perspective," in *In Whom We Live and Move and Have Our Being*, ed. Philp Clayton and Arthur Peacocke (Grand Rapids, Mich.: William B. Eerdmans, 2004), p. 81.

⁸ Elsewhere Clayton distinguishes between what he calls the *intuition* of the infinite and the *concept* of the infinite. He thinks that the primitive intuition of the infinite is the idea of "something without limits" or "the unlim-

ited." He claims that this intuitive idea is underdeterminative for the concept of the infinite; indeed, one should really speak of a plurality of concepts, since the intuitive idea of the infinite can be variously conceptualized. He thinks that "each demands separate evaluation as one moves from one's starting intuitions to constructing metaphysical systems based on them" (Philip Clayton, *The Problem of God in Modern Thought* [Grand Rapids, Mich.: Eerdmans, 2000], p. 119; see pp. 118-120. It is odd, then, that in the quotation cited in the text he says it is "impossible to conceive of God as fully infinite if he is limited by something outside of himself." Since different conceptions of the infinite are possible, this assertion seems plainly false. Clayton's argument is based, rather, on his intuitive idea of the infinite, an intuition which reflection might reveal to be incoherent and therefore untenable as a concept of the infinite. It may turn out that what is impossible is to conceive of God as "truly infinite" as that expression is (mis)understood by Hegel and his *Anhänger*. Indeed, Clayton seems to admit this (*ibid.*, pp. 152-3; but cf. p. 168).

⁹ Clayton, *Problem of God*, p. 125. Cf. Hegel's statement: "The infinite *is*; in this immediacy it is at the same time the *negation* of an other, of the finite. As thus in the form of simple being and at the same time as the *non-being* of an other, it has fallen back into the category of *something* as a determinate being in general — more precisely, into the category of something with a limit. . . ." (Hegel, *Logic*, par. 275. Cf. par. 278).

¹⁰ F. LeRon Shults, *The Postfoundationalist Task of Theology* (Grand Rapids, Mich.: William B. Eerdmans, 1999), pp. 100-1.

¹¹ Cf. Hegel's reflection that if we think of the infinite and the finite as existing without connection, then "The infinite, in that case, is *one of the two*; but as only one of the two it is itself finite, it is not the whole but only one side; it has its limit in what stands over against it; it is thus the finite *infinite*. There are present only two *finites*" (Hegel, *Logic*, par. 288).

¹² F. LeRon Shults and Steven J. Sandage, *Faces of Forgiveness* (Grand Rapids, Mich.: Baker, 2003), pp. 161-4.

¹³ The notion of infinity plays a prominent role throughout his *Systematic Theology*. Read in isolation, some passages might be misleading. For example, when Pannenberg says that "finite objects are conditioned by their being carved out of the infinite and defined by it" (1: 140; cf. 165, 353, 356), this sounds monistic; but in fact Pannenberg is talking about our vague, pre-conceptual awareness of the infinite, which is then differentiated by rational reflection (see 1: 114).

¹⁴ Pannenberg, *Systematic Theology*, 1: 397-8.

¹⁵ *Ibid.*, 1: 399-400.

¹⁶ *Ibid.*, 1: 400.

¹⁷ *Ibid.*, 1: 408.

¹⁸ *Ibid.*, 1: 412.

¹⁹ *Ibid.*, 1: 415.

²⁰ *Ibid.*, 1: 416.

²¹ *Ibid.*, 1: 421.

²² *Ibid.*, 1: 443.

²³ *Ibid.*, 1: 446.

²⁴ Ibid., 1: 445-6 (my emphases).

²⁵ Ibid., 1: 446 (my emphasis).

²⁶ Perhaps we could formulate the argument more accurately as follows: for any being x ,

1. x is finite = $\text{def. } x$ is distinct from something else.

2. x is infinite = $\text{def. } x$ is not finite.

3. God is infinite.

4. Therefore, God is not finite.

5. Therefore, God is not distinct from anything else.

Pannenberg would avoid the conclusion by replacing (2) with

2'. x is infinite = $\text{def. } x$ is not finite, but x is positively related to the finite.

But (2') does nothing to avert the problem. For from (2') and (3) it follows that

6. God is not finite, but He is positively related to the finite,

from which it follows logically (by Simplification) that

4. Therefore, God is not finite,

and the conclusion then follows as before.

²⁷ Clayton, *God and contemporary Science*, p. 47.

²⁸ Ibid., pp. 20-1, 157-8, 260-2.

²⁹ Ibid., pp. 87-90.

³⁰ Ibid., p. 89; cf. p. 90.

³¹ Ibid., pp. 95, 157-8, 190.

³² Clayton, *Problem of God*, p. 125.

³³ Ironically, on Clayton's view the infinite God still exists outside of the world even though the world does not exist outside of God. So the infinite remains "outside of" the finite on his view.

³⁴ Shults and Sandage, *Faces of Forgiveness*, p. 166.

³⁵ Ibid., p. 167.

³⁶ Georg Cantor, *Contributions to the Founding of the Theory of Transfinite Numbers*, trans. with an Introduction by Philip E. B. Jourdain (New York: Dover Publications, 1915).

³⁷ Pannenberg, *Systematic Theology*, 1: 397.

³⁸ Ibid.

³⁹ On this distinction see the fine treatment by A. W. Moore, *The Infinite, The Problems of Philosophy: Their Past and Present* (London: Routledge, 1990).

⁴⁰ Cf. the critique of Avaita Vendanta Hinduism by Robin Collins, "Eastern Religions," in *Reason for the Hope Within*, ed. Michael J. Murray (Grand Rapids, Mich.: William B. Eerdmans, 1999), pp. 188-92. The monism implied by Hegel's argument is not one according to which the world is a part of God, in the way that one's hand is a part of one's body. For the whole and the part are on such an account still distinct; the body is not a hand. Hence, Hegel's own solution to the contradiction between the infinite and finite was inadequate, for so long as the distinction between God and the world is preserved in their higher unity, they still limit one another. As Collins points out, views which deny the reality of distinctions between beings amount, not to pantheism but to illusionism. The Absolute is the only reality and the world of objects distinct from it is illusory (*maya*). Thus, what our neo-Hegelian Christian theologians are driving toward is a monism akin to that of Taoism, Mahayana Buddhism, and Vendanta Hin-

duism, on which see Stuart C. Hackett, *Oriental Philosophy: A Westerner's Guide to Eastern Thought* (Madison, Wis.: University of Wisconsin Press, 1979). Cf. Alvin Plantinga's critique of John Hick's notion of the ineffable Real in Alvin Plantinga, *Warranted Christian Belief* (Oxford: Oxford University Press, 2000), pp. 49-55.

⁴¹ For discussion and literature see *Philosophy of Religion: A Reader and Guide*, ed. William Lane Craig (New Brunswick, N.J.: Rutgers University Press, 2002), Part III: "The Coherence of Theism."

Genesis, Evil, and Modern Science

by William A. Dembski

1 The Attraction of a Young Earth

A tight link between the world's evil and human sin no longer appears plausible because natural history seems incapable of being squared with a traditional view of the Fall. Even though I accept standard astrophysical and geological dating (12 billion years for the universe, 4.5 billion years for the Earth), young-earth creationists deserve credit here. They see the crucial significance, theologically, of preserving the link between evil (both personal and natural) and human sin. That's why, when asked what's riding on a young earth, proponents of this position invariably cite Romans 5:12, which speaks of death as a consequence of human sin.¹

To be sure, one can try to make an exegetical argument that Romans 5:12 is speaking strictly about human death. But young-earth creationists have an easier time of it, both exegetically and theologically, in interpreting this passage as speaking about all death and not just human death. A world in which natural evils such as death, predation, parasitism, disease, drought, famines, earthquakes, and hurricanes precede humans and thus appear causally disconnected from the Fall seems hard to square with a creation that, from the start, is created good. Without a young earth (i.e., an earth created in six 24-hour days and spanning a history of only a few thousand years), how can such natural evils be traced back to human sin?

Young-earth creationism presents a straightforward chronology that aligns the order of creation with a traditional conception of the Fall: God creates a perfect world, God places humans in that world, they sin, and the world goes haywire. In this chronology, theology and history march in sync with the first human sin predating and being causally responsible for natural as well as personal evil. Yet if the bulk of natural history predates humans by billions of years and if over the last 600 million years multicelled animals have been emerging, competing, fighting, preying, parasitizing, exterminating, and going extinct, then young-earth creationism's harmony of theology and history becomes insupportable. In that case, natural history as described by modern science appears irreconcilable with the order of creation as described by Genesis.

Creation, according to Genesis, is a progression of effected words spoken by God.² This progression has an inherent logic since for one word to take effect depends on others having taken effect (e.g., the creation of fish presupposes the creation of water). This logic is what is meant by

the order of creation (cf. the order of divine decrees in reformed theology). Accordingly, we can think of the order of creation as history from the vantage of divine intention and action. This top-down view of history regards creation as a drama produced, directed, and written by God and sees the logic of this history as the pattern of purposes that God intends for creation. History from such a divine perspective contrasts with our ordinary, bottom-up view of history, often referred to as natural history. Natural history confines history to space and time and sees the logic of history as determined by physical causality.

This distinction between the order of creation and natural history is a special case of a deeper distinction regarding the nature of time. In English, we have just one word for time. But the Greek of the New Testament had two: *chronos* and *kairos*. According to the standard lexicon of New Testament Greek by Arndt and Gingrich, *chronos* denotes mere duration whereas *kairos* denotes time in combination with purpose (especially divine purpose). Thus, in defining *kairos*, Arndt and Gingrich offer such definitions as "a welcome time," "the right, proper, favorable time," and "the time of crisis."³ The special role of *kairos* in fulfilling divine purposes is reflected in the liturgy of the Eastern Orthodox Church, which begins with the deacon calling to the congregation, "It is time [*kairos*] for the Lord to act," signifying that in worship temporality and eternity intersect.⁴

Paul Tillich made much of the distinction between *chronos* and *kairos* in his theology. In his lectures on the history of Christian thought, he remarked,

[*Kairos* describes] the feeling that the time [is] ripe, mature, prepared. It is a Greek word which, again, witnesses to the richness of the Greek language and the poverty of modern languages in comparison with it. We have only the one word "time." The Greeks had two words: *chronos* (still used in "chronology," "chronometer," etc.): it is clock time, time which is measured. Then there is the word *kairos*, which is not the quantitative time of the watch, but is the qualitative time of the occasion: the "right" time. "It is not yet *kairos*," the hour; the hour has not yet come. (Cf. in the Gospel stories....) There are things in which the right time, the *kairos*, has not yet come. *Kairos* is the time which indicates that something has happened which makes an action possible or impossible. We all have in our lives moments in which we feel that

¹See, for instance, Henry Morris, *Scientific Creationism* (San Diego, Calif.: Creation-Life Publishers, 1974), 208, 211, 226, 229, 243, 245. Other scriptural passages that young-earth creationists cite to argue for death being a consequence of human sin include Rom. 6:23 and 1 Cor. 15:20–23.

²See William A. Dembski, *Intelligent Design: The Bridge Between Science and Theology* (Downers Grove, Ill.: InterVarsity, 1999), ch. 8, titled "The Act of Creation."

³William F. Arndt and F. Wilbur Gingrich, *A Greek-English Lexicon of the New Testament and Other Early Christian Literature*, 2nd ed. (Chicago: University of Chicago Press, 1979), 394–395.

⁴See <http://www.holy-trinity.org/liturgics/sokolov-deacon.html> (last accessed May 11, 2006), which gives the notes to deacons of the Eastern Orthodox liturgy.

now is the right time for something: now I am mature enough for this, now everything around me is prepared for this, now I can make the decision, etc.: this is *kairos*. In this sense, Paul and the early Church spoke of the “right time,” for the coming of the Christ. The early Church, and Paul to a certain extent, tried to show why this time in which the Christ appeared was the right time, why it is the providential constellation of factors which makes His appearance possible.⁵

The distinction between *chronos* and *kairos* can be understood in light of the New Testament distinction between the visible realm (i.e., the physical world or *kosmos*) and the invisible realm (i.e., the heavenly world or *ouranos*).⁶ Time operates differently in these two realms. According to the Apostle Paul, “the things which are seen are temporal; but the things which are not seen are eternal.” (2 Corinthians 4:18) The visible realm thus operates according to *chronos*, the simple passage of time. But the invisible realm, in which God resides, operates according to *kairos*, the ordering of reality according to divine purposes. Of the two forms of time, *kairos* is the more basic. *Chronos* is the time of physics, and physics has only been around as long as the cosmos. But *kairos* is God’s time, and God has been around forever. The *chronos-kairos* distinction underwrites such scriptural assertions as “One day is with the Lord as a thousand years, and a thousand years as one day.” (2 Peter 3:8) And yet, *chronos* and *kairos* are not utterly separate. When the visible and invisible realms intersect, *kairos* becomes evident within *chronos*. The creation of the world and the incarnation of the Second Person of the Trinity are the preeminent instances of this intersection.

Given that time means different things from an earthly and heavenly vantage, Genesis 1 confronts us with the problem of aligning natural history (*chronos*) with the order of creation (*kairos*). To this problem, young-earth creationism offers a straightforward solution: it identifies natural

history with the order of creation. This solution is, to be sure, theologically neat. Yet, in our current noetic environment, informed as it is by modern astrophysics and geology, the scientific community as a whole regards young-earth creationism as scientifically untenable. Some young-earth creationists will even concede this point, admitting that the preponderance of scientific evidence goes against their position. Nevertheless, they feel compelled to maintain their young-earth position because they see Scripture as requiring it. Their hope is that science in the future will vindicate their position.⁷

The majority of young-earth creationists, however, find fault with our current scientific understanding of the age of the Earth and universe, arguing that a young-earth position actually makes for better science.⁸ I personally have found such arguments unconvincing. Consider, for instance, the Institute for Creation Research’s RATE project (RATE = Radioisotopes and the Age of the Earth). Donald DeYoung, in the last chapter of his recent book on the topic, outlines the “challenges” (his word) that remain. Here is one of several challenges that, to my mind, significantly undercuts the project:

The acceleration of nuclear decay [which is required for the RATE project to establish a young earth] gives rise to some basic unanswered questions. Why did it occur and what was the mechanism? Exactly when did the decay rates increase? Each of these questions has both scientific and theological components. There is also a serious concern for the protection of plant, animal, and human life from increased nuclear radiation during the Genesis flood event. Further insight is needed on these issues.⁹

If the science is against a young earth, the history of biblical interpretation is not. Indeed, young-earth creationism was overwhelmingly the position of the Church from the Church Fathers through the Reformers. Even Origen and Augustine, who saw the order of creation as diverging from natural history (and thus were sensitive to the *kairos-chronos* distinction) held to a recent earth.¹⁰ Notwithstand-

⁵Available online at

<http://www.religion-online.org/showchapter.asp?title=2310&C=2308> (last accessed May 11, 2006). See also the opening of Tillich’s *A History of Christian Thought* (New York: Touchstone, 1972) as well as volume 3 of his *Systematic Theology* (Chicago: University of Chicago Press, 1967).

⁶Lee Irons and Meredith G. Kline, in their contribution to *The Genesis Debate*, essentially reinvent the *chronos-kairos* distinction, distinguishing a “lower-register” cosmology, which is the realm of the visible, from an “upper-register” cosmology, which is the realm of the invisible. As they put it: “The two-register cosmology of Scripture [consists] of the upper (invisible) and lower (visible) registers. . . . [The] two-register cosmology explains the significance of the nonliteral nature of the time indicators in Genesis 1 within the overall cosmological teaching of Scripture. . . . Although some critics might be tempted to dismiss two-register cosmology as a speculative construct, in reality the terms *upper register* and *lower register* are useful terms for the two realms that compose the created order. The upper register is the invisible dwelling place of God and His holy angels, that is, heaven. The lower register is called ‘earth,’ but includes the whole visible cosmos from the planet Earth to the star-studded sky (Col. 1:16).” See their essay “The Framework View” in David G. Hagopian, *The Genesis Debate: Three Views on the Days of Creation* (Mission Viejo, Calif.: Crux Press, 2001), 236–237.

⁷See the essay titled “Young Earth Creationism” by Paul Nelson and John Mark Reynolds in J. P. Moreland and John Mark Reynolds, *Three Views on Creation and Evolution* (Grand Rapids, Mich.: Zondervan, 1999).

⁸Don DeYoung, *Thousands . . . Not Billions: Challenging an Icon of Evolution, Questioning the Age of the Earth* (Green Forest, Ariz.: Master Books, 2005).

⁹*Ibid.*, 180. Italics in the original. Compare Kurt Wise’s view of *catastrophic plate tectonics*, in which “new ocean floor was being created during the Flood at miles per hour with reversals occurring every couple of weeks.” Wise has yet to account for how such an acceleration of ordinary plate tectonic movement, in which the Earth’s crust moves in centimeters per year rather than in miles per hour, can avoid the destructive effects of the heat generated by such acceleration. See Wise, *Faith, Form and Time: What the Bible Teaches and Science Confirms about Creation and the Age of the Universe* (Nashville: Broadman & Holman, 2002), 193.

¹⁰Origen: “After these statements, Celsus, from a secret desire to cast discredit upon the Mosaic account of the creation, which teaches

ing, we have examples in the history of biblical interpretation where a view once universally held was eventually abandoned. For instance, at the time a young earth was unquestioned, the Church also taught that the Earth was stationary. Psalm 93 states that the Earth is established forever and cannot be moved. A face-value interpretation of Psalm 93 seems to require geocentrism. And yet, today's young-earth creationists accept the Copernican Revolution. Moreover, if face-value interpretation is the key to biblical hermeneutics,¹¹ what are we to make of the seventh day of creation, the day of God's rest? Was it also exactly twenty-four hours in length? Many biblical scholars think that we are still in the seventh day.¹²

This is well-worn ground, and young-earth creationists have answers to these questions, just as those who propose alternative interpretations of Genesis have rebuttals. As Christians we have an obligation, as the Apostle Paul put it, to "rightly divide" (i.e., interpret) the Scriptures. But what guides our interpretation of the Scriptures? Clearly, our knowledge of the world plays some role. Our knowledge of physics from the seventeenth century onwards has rendered geocentrism untenable. In trying to balance the science of the day with the interpretation of Scripture, I therefore

that the world is not yet ten thousand years old, but very much under that, while concealing his wish, intimates his agreement with those who hold that the world is uncreated." *Contra Celsum (Against Celsum)* 1.19, *Ante-Nicene Fathers* 4, 404. Augustine: "They are deceived, too, by those highly mendacious documents which profess to give the history of many thousand years, though, reckoning by the sacred writings, we find that not 6000 years have yet passed." Augustine, "Of the Falseness of the History Which Allots Many Thousand Years to the World's Past," *De Civitate Dei (The City of God)*, xii, 10. Nonetheless, Origen questioned the order of days by asking how the sun and moon could be created on day four when light was created on day one and yet depends on such heavenly bodies for its existence. Likewise, Augustine, in his *Literal Commentary on Genesis*, speaks of a simultaneous creation. Neither theologian therefore held to young-earth creationism as this position is understood today, which requires a strict face-value interpretation of Genesis (six exact 24-hour days).

¹¹Clearly, face-value interpretation cannot be the key to biblical hermeneutics. Consider Matthew 18:8-9: "If thy hand or thy foot offend thee, cut them off, and cast them from thee: it is better for thee to enter into life halt or maimed, rather than having two hands or two feet to be cast into everlasting fire. And if thine eye offend thee, pluck it out, and cast it from thee: it is better for thee to enter into life with one eye, rather than having two eyes to be cast into hell fire." Anyone who interprets this passage at face-value is likely to be put in a straitjacket for one's own protection.

¹²For instance, Charles Aalders writes, "It would be difficult to conceive of this 'seventh day' as an ordinary 24-hour day, as many claim, or as a day from sunup to sundown. This immediately raises the problem of whether God's rest continued for only one 24-hour day. Certainly, we must consider the possibility that this rest of God still continues. For us humans a day of rest is always followed by another series of work days. But this is not the case with God's creation days. With Him we have six days of creation and then one day of rest. But His day of rest is then not followed by more days of creation work. Our attention should also be called to the omission of any reference to 'evening' and 'morning' with respect to this day of rest. In the light of what has been said above, this is understandable. This seventh day began with a morning but it had no evening because it still continues." G. Ch. Aalders, *Genesis*, vol. 1, trans. W. Heynen (Grand Rapids, Mich.: Zondervan, 1981), 75-76.

often come back to an observation of the nineteenth century Princeton theologian Charles Hodge. Early in his systematic theology, he noted that even though Scripture is true, our interpretations of it can be in error; as a consequence, it can be a trial for the Church when long-held interpretations are thrown into question. As he put it,

Christians have commonly believed that the earth has existed only a few thousands of years. If geologists finally prove that it has existed for myriads of ages, it will be found that the first chapter of Genesis is in full accord with the facts, and that the last results of science are embodied on the first page of the Bible. *It may cost the church a severe struggle to give up one interpretation and adopt another*, as it did in the seventeenth century [when the Copernican system displaced the Ptolemaic system of the universe], but no real evil need be apprehended. The Bible has stood, and still stands in the presence of the whole scientific world with its claims unshaken.¹³

Despite the Galileo episode, the Church in the end willingly relinquished geocentrism. Contrary to the widespread misconception that the Copernican revolution demoted us from a privileged place in the universe, the center of the universe was, in the Ptolemaic-Aristotelian cosmology that held sway prior to Copernicus, the place of least privilege. It was a place of corruption and mortality. For incorruption and immortality, one had to go beyond the Earth to the heavenly bodies, which moved around the Earth in unending circular orbits and were therefore regarded as the realm of eternity. At the outer reaches of heaven was the Empyrean, thought by the ancients to be a realm of pure fire or light and within medieval Christian theology to be the abode of God and the angels.¹⁴

Except for preserving the face-value interpretation of certain Old Testament passages (like Psalm 93), nothing much seems to have been riding theologically on preserving geocentrism as a proper interpretation of Scripture. The same cannot be said for a young earth. A young earth seems to be required to maintain a traditional understanding of the Fall. And yet a young earth clashes sharply with mainstream science. Christians therefore seem to be in a position of having to choose their poison. They can go with a young earth, thereby maintaining theological orthodoxy but committing scientific heresy; or they can go with an old earth, thereby committing theological heresy but maintaining scientific orthodoxy.

2 The Problem with Old-Earth Creationism

This clash of theological to scientific orthodoxy constitutes a false dilemma. Indeed, I will argue that one can be both theologically orthodox about the Fall and scientifically

¹³Charles Hodge, *Systematic Theology*, vol. 1 (reprinted Grand Rapids, Mich.: Eerdmans, 1981), 171. Emphasis added.

¹⁴All of this is beautifully recounted in Gonzalez and Richards, *The Privileged Planet* in chapter 11 titled "The Revisionist History of the Copernican Revolution."

orthodox about the age of the Earth. Nonetheless, the actual arguments I've seen from old-earth creationists that attempt to preserve both theological and scientific orthodoxy have struck me as inadequate if by theological orthodoxy one means a traditional understanding of the Fall that traces all natural and personal evil in the world to human sin. Take Hugh Ross. Ross does not believe the Garden of Eden was free of death, decay, pain, and suffering. For him, there was never a perfect paradise. To justify this claim scripturally, Ross will cite Genesis 3:16, in which God informs Eve after she has sinned that he will greatly multiply her pain in childbirth. Since zero multiplied by anything remains zero, Ross infers that God did not here initiate Eve's pain but rather increased her existing pain in childbirth. More generally, Ross will suggest that God uses randomness, waste, and inefficiencies (his terms) to bring about the "very good" world into which he placed Adam.¹⁵

Mark Whorton, in his recent book on the age of the Earth, attempts to justify the creation of a less than perfect world into which God then places humans who have yet to sin (accordingly, the lack of perfection of the world is not to be attributed to human sin). To argue his point, Whorton contrasts what he calls a Perfect Paradise Paradigm with a Perfect Purpose Paradigm:

The two creation paradigms offer diametrically different perspectives on the problem of suffering. The Perfect Paradise Paradigm views suffering in light of the past. All suffering is traceable back to the original sin of Adam in the garden. It was never God's intent for His creation to suffer or be blemished in any way because He created it to be "very good." In stark contrast, the Perfect Purpose Paradigm sees suffering in light of the future. God has a plan, and history is unfolding in a providentially directed process that will ultimately accomplish His eternal purpose. Until the end, the plan will not be complete and the purpose will not be fully accomplished. . . . Suffering in this life can only be reconciled from the eternal perspective of the Master's plan.¹⁶

Thus, according to Whorton's Perfect Purpose Paradigm, God creates a world of suffering not in response to human sin but to accomplish some future end (i.e., "the Master's plan"). But this makes human suffering a means to an end. And even if this end is lofty, it is still the case that we are being used. Used is used, and there is no way to make this palatable, much less compatible with human dignity. That's why Kant taught that we must treat fellow human beings not as means but as ends in themselves. And that's why, unless human suffering is permitted by God because, at some level, we have brought it on ourselves, Whorton's Perfect Purpose Paradigm commits an end-justifies-the-means fallacy.

¹⁵Hugh Ross, *Creation and Time: A Biblical and Scientific Perspective on the Creation-Date Controversy* (Colorado Springs: Navpress, 1994), 55, 65–69, 88.

¹⁶Mark S. Whorton, *Peril in Paradise: Theology, Science, and the Age of the Earth* (Waynesboro, Georgia: Authentic Media, 2005), 151.

In making sense of the Fall in light of modern science, old-earth creationists often find themselves having to deny that natural evil is morally significant. The rationale here is that personal evil (the harm we intentionally cause to ourselves and others) doesn't kick in until humans first sin, and so, by denying that natural evil is morally significant, old-earth creationists, like their young-earth counterparts, are able to attribute all morally significant evil to human sin after all. On this view, personal evil is morally significant but natural evil doesn't become morally significant until humans experience it as alienation from God, which they do once they have sinned (i.e., after the Fall).

One way to justify that natural evils are not morally significant, inspired by Descartes but no longer popular, is to characterize animals as automatons (i.e., as complex machines consisting of bones, muscles, and organs that in principle could be replaced with cogs, cams, and pistons) and thus to deny them the ability to suffer as humans do. Accordingly, only souls made in the image of God can truly suffer and thus experience natural evil as morally significant. Needless to say, in our pet-friendly culture, this way of dealing with natural evil does not sit well with our noetic environment.

Another way to justify that natural evils are not morally significant is to grit one's teeth and boldly assert that God takes full responsibility for natural evil, that he directly created it, that he even takes pleasure in it, and that, however counterintuitive it may seem, natural evil is entirely compatible with the goodness of God in creation. Accordingly, we are mistaken if we take death, predation, parasitism, disease, drought, famines, earthquakes, and hurricanes as evidence against the creation being "very good." On this view, the challenge of theodicy is not, as Mark Whorton advises, to trust that God's good purposes will be accomplished somewhere down the road but to get over our squeamishness. David Snoke, in justifying that a good God could create dangerous animals and be directly responsible for bringing about natural evil, puts it this way:

The young-earth creationist and the atheist Darwinist have in common their belief that God would never create killer things. The atheist removes God from the picture to account for the natural evils of this world, while the young-earth creationist removes the record of killer animals from the picture to preserve the goodness of God. Both of these views need to interact with a fully biblical picture of God, as he is revealed in Scripture and in nature—powerful, uncontrollable, and able to pour out extreme violence, yet also just, merciful, and able to bless beyond all our expectations.¹⁷

But how is a God who creates killer things and pours out extreme violence to be regarded as benevolent except insofar as such acts respond to human sin and have redemptive significance? Snoke gives no indication that God brought about natural evil for the greater good of helping to

¹⁷David Snoke, "Why Were Dangerous Animals Created?" *Perspectives on Science and Christian Faith* 56(2) (2004): 125, available online at <http://www.asa3.org/ASA/PSCF/2004/PSCF6-04Snoke.pdf> (last accessed January 10, 2006).

redeem humanity. Instead, Snoko portrays the violence and cruelty of nature as a form of divine self-amusement: “God does claim direct responsibility for the creation of natural evil, that is, things in nature which terrorize us. . . . God neither apologizes for making these things, nor weeps over them—he glories in them.”¹⁸

Elsewhere, Snoko recalls one of his grandfather’s favorite acronyms: “NITRIC”—“Nature In The Rough Is Cruel.”¹⁹ The way Snoko portrays it, NITRIC is a positive virtue of nature rather than defect of nature that needs to be eradicated. Whatever happened to the lovingkindness of God not just for humanity but also for creation as a whole (the Hebrew *hesed*)? Whatever happened to love as the defining attribute of God (the Greek *agape*)? How is the love that 1 Corinthians 13 ascribes to God to be reconciled with the violence that Snoko ascribes to God?

Snoko has fallen into the trap of converting a problem into its own solution. It does nothing to attenuate the problem of natural evil to say that natural evil is really okay because God invents it and is proud of inventing it—full stop. If anything, such a claim exacerbates the problem of natural evil because it removes from natural evil any redemptive element. The only way for natural evil, and the suffering it entails, to be redemptive is if it helps to free the creation from a deeper, more insidious evil. Natural evil constitutes a disordering of nature. A benevolent God will bring about natural evil only as a last-resort to remedy a still worse evil, not as an end in itself over which to glory.

3 The Gravity of Sin²⁰

The question that now needs to be addressed is why would a benevolent God permit evil, tolerate its continuation, and even invent a form of it (i.e., natural evil). To answer this question, we need to reexamine the origin of evil. Earlier, I argued that evil is the result of a will that has turned against God. Clearly, the unity of the Godhead is such that God’s will does not, and indeed cannot, turn against God. Evil, therefore, is the result of a *creaturely* will turning against God. The essence of evil is rebellion of the creature. This rebellion constitutes sin (singular) and finds expression in numerous particular sins (plural). As a consequence, sin separates us from God. This rift between God and humanity, however, cannot be left to stand. To let it stand would thwart God’s purpose for humanity, which is to be united with humanity in love. Once sin has entered the picture, God’s overriding task is to find a way to heal this rift.

At this point one might ask what the big deal is about God healing the rift between humanity and himself and why it should be God’s task to oversee the healing. Since we’re the guilty party, why shouldn’t that burden fall on us? Better yet, why doesn’t God just get over it and forgive

us? As Heinrich Heine is reported to have said on his death bed, “Le bon Dieu me pardonnera; c’est son metier” (“The good God will forgive me; that’s his job”).²¹ God is in the forgiving business, so why doesn’t he just have at it? There are two problems with this train of questions:

- (1) It presupposes that humans have the power to heal the rift with God by a straightforward act of the will, voluntarily desisting from their rebellion against God. This is Pelagianism. The clear teaching of Scripture is that humanity does not possess this power (see Romans).
- (2) Forgiveness, in the uncomplicated sense of “I won’t hold what you did against you,” doesn’t address the root cause of what led to the rift that calls for forgiveness. Without addressing this root cause, forgiveness becomes irresponsible, condoning what should not be condoned.

The term for God healing the rift between humanity and himself is *atonement*. Within Christian theology, atonement results through the redemption of Christ on the Cross. Redemption is a business term. It denotes an exchange that restores to one party something previously belonging to it but now in the hands of another. God is the redeemer. Humanity used to belong to God. But through sin, humanity has become captive to evil. The redemptive work of God in Christ on the Cross restores humanity back to God.

This picture of Christ’s redeeming work is accurate as far as it goes, but it omits one crucial element: humanity, in becoming captive to evil, gave its consent. In other words, humans are complicit in the evil from which God is striving to deliver them. For redemption to effectively deliver humanity from evil therefore requires humanity to be clear as to precisely what it has consented to in rebelling against God and embracing evil. To achieve this clarity, humanity must experience the full brunt of the evil that it has set in motion, and this requires that the creation itself fully manifest the consequences of humanity’s rebellion against God. This does not mean the creation has to become as corrupt as it could possibly be. But it does mean that the creation must not conceal or soft-sell the gravity of sin. It also explains why God, despite having the power to intervene and stop specific evils, may refrain from doing so.

In answer, then, to the question why a benevolent God would permit evil, tolerate its continuation, and even invent a form of it (i.e., natural evil), it is to manifest the full consequences of human sin so that when Christ redeems us, we may clearly understand what we have been redeemed from. Without this clarity about the evil we have set in motion, we will always be in danger of reverting back to it because we will not see its gravity. Instead, we will treat it lightly, rationalize it, shift the blame for it—in short, we will do anything but face the tragedy of willfully separating ourselves from the source of our life, who is God. Addition-

¹⁸Ibid., 119–120.

¹⁹Ibid., 117.

²⁰This section was largely inspired by John Stott’s *The Cross of Christ* (Downers Grove, Ill.: InterVarsity, 1986) and, in particular, his assimilation there of Saint Anselm’s *Cur Deus Homo?*

²¹Ibid., 87. Compare <http://www.ronaldbrucemeyer.com/rants/1213almanac.htm> (last accessed May 11, 2006), which places the quote a decade earlier in response to an attack of paralysis.

ally, we will fail to recognize the enormity of Christ's suffering on the Cross to redeem us. In consequence, we will not be moved to repent of our sin and return to God in trust and humility.

In a fallen world, the only currency of love is suffering. Indeed, the only way to gauge the extent to which one loves another is by what that person is willing to endure for the other. Without the cost incurred by suffering, love among fallen creatures becomes cheap and self-indulgent. Suffering removes the suspicion that the good we do for one another is for ulterior motives, with strings attached, a quid pro quo. Christ, by going to the Cross and there taking on himself the sin of the whole world, fully demonstrates the love of God. Moreover, only such a full demonstration of God's love enables us to love God with all our heart. The extent to which we can love God depends on the extent to which God has demonstrated his love for us, and that depends on the extent of evil which God has had to absorb, suffer, and overcome on our behalf.

To say that love in a fallen world depends on suffering raises the question what love would look like in a nonfallen world. In a world untouched by sin, love is expressed through the gift of sacrifice. To see this, consider that the very existence of the world depends on a divine gift of sacrifice. A common challenge to the Christian doctrine of creation is to ask whether in creating the world, God has not augmented himself since it would appear that God plus the world is greater than God alone. This is supposed to raise an insuperable difficulty for Christian orthodoxy, which regards God as perfect and thus as not improvable through the addition of some object, event, or state of affairs external to God (e.g., the world).

But, in fact, God plus the world is less than God alone. To see this, consider that God could have created any number of worlds. Thus, in creating this one, God, far from expanding himself, instead contracted himself. The lesson here is that even apart from evil and sin, it is possible for intelligences (whether created or uncreated) to give irrevocably so as to deny and thereby sacrifice other options. Christian theology has always regarded God's creation of the world as an act of love. In the act of creation, God gives himself irrevocably to this world to the exclusion of all others. Creation is a gift of sacrifice. As beings created in God's image, we are likewise able, and indeed called, to offer such gifts of sacrifice. Moreover, such acts of love would be ours to perform even if we had never sinned.

In a fallen world, however, sacrifice by itself is not enough to assure love. The problem is that fallen creatures know very well about delayed gratification, sacrificing an immediate good for a greater benefit down the road. This is not to say there's anything wrong with delayed gratification of rewards or sacrifice in this sense. But sacrifice ceases to be a gauge for love when it becomes an instrument of exchange, part of a system of reciprocity in which persons are duly compensated for costs incurred. This is why Jesus remarks, "Greater love hath no man than this, that a man lay down his life for his friends." (John 15:13) In laying down his life at the Cross, Jesus offered himself in a sacrifice of suffering that cannot be compensated (certainly not by us). Only the sacrifice of a suffering that cannot be compensated is a true gauge of love in a fallen world.

It is vital here to have a correct picture of Christ's redemption and our role in it. In allowing evil and then redeeming us from it, God is not an arsonist who starts a fire, let's things heat up for us, and then, at the last moment, steps in so that he can be the big hero. Nor is God a casual bystander, who sees a fire start spontaneously and then lets it get out of control so that he can be the big hero to rescue us. We are the arsonists. We started the fire. God wants to rescue us not only from the fire we started but also, and more importantly, from our disposition to start fires, that is, from our life of arson. But to rescue us from a life of arson requires that we know the seriousness of what arson can do. Fires always start out small. If God always instantly put out the fires we start, we would never appreciate the damage fires can do. God therefore allows the fire that we have started in consenting to evil to rage, but not so that he can be a big hero when he rescues us from it but so that we can rightly understand the human condition and come to our senses. In rescuing us, God does end up being a hero. But that is not the point. The point is to fix a broken relationship between God and humanity.

This view of God's redemption in Christ is basic Christian theology. I regard it as not only true but also mandatory for sound Christian faith. Nonetheless, it presupposes that all evil in the world ultimately traces back to human sin. For this view of redemption to be plausible within our current noetic environment therefore requires an explanation of how natural evil could precede the first human sin and yet result from it. Contemporary science is firmly convinced that the Earth and universe are not thousands but billions of years old. It follows that humans have only been around a minuscule portion of that time and that prior to their arrival natural evils abounded. To see how natural evil could precede the first human sin and yet be a consequence of it, we will need to examine a result known as Newcomb's paradox and draw out the implications of this paradox for divine action.

4 Newcomb's Paradox

Physicist William Newcomb devised the paradox that bears his name in the 1960s. The late Harvard philosopher Robert Nozick then popularized it by applying it to decision theory.²² The paradox works as follows. Imagine two boxes, one black and the other white. The black box always contains \$1,000. The white box contains either \$1,000,000 or nothing. The contents of neither box is visible. You can choose to take the sum of money in both boxes or the money that's in the white box alone. Suppose an agent with perfect foreknowledge (i.e., with perfect knowledge of future contingent propositions) informs you that \$1,000,000 will today be put into the white box if tomorrow you choose only the white box but that no money will

²²Robert Nozick, "Newcomb's Problem and Two Principles of Choice," in N. Rescher, ed., *Essays in Honor of Carl G. Hempel*, Synthese Library (Dordrecht, Holland: D. Reidel, 1969), 115. For a nice popular treatment of Newcomb's paradox, see William Poundstone, *Labyrinths of Reason: Paradox, Puzzles, and the Frailty of Knowledge* (New York: Doubleday, 1988), ch. 12.

be put into the white box today if tomorrow you choose both boxes.

Tomorrow rolls around. What do you do? You can adopt either of two strategies: a one-box strategy or a two-box strategy. According to the two-box strategy, since whatever money in the white box has already been placed there, you may as well choose both boxes. To choose only the white box leaves you necessarily \$1,000 poorer. You'll get what's in the white box regardless (hopefully \$1,000,000) and you'll be sure to get the \$1,000 in the black box. On the other hand, you can adopt the one-box strategy. In adopting this strategy, you reason as follows: since you know the agent has perfect foreknowledge (let's say this has been verified on numerous occasions), if you choose both boxes, it's guaranteed that the white box will be empty. To choose both boxes therefore leaves you necessarily \$999,000 poorer. Sure, you'll get the \$1,000 in the black box, but you'll miss out on the \$1,000,000 that would have been placed in the white box if only you hadn't gotten greedy and decided to go for both boxes.

Newcomb's paradox was much discussed in the philosophical literature of the 1970s and 80s. One-boxers and two-boxers debated the merits of their preferred decision principle and divided pretty evenly. Always at issue was what sort of agent could in fact possess knowledge of future contingent propositions. William Lane Craig's article "Divine Foreknowledge and Newcomb's Paradox" appeared in 1987 and thus came toward the end of intense debate among philosophers over this paradox.²³ There Craig detailed how efforts to show that knowledge of future contingent propositions is incoherent all ended in stalemate. Of course, this by itself doesn't prove that such knowledge exists or is instantiated in any agent. Nonetheless, it leaves a wide-open door to the classical Christian view of divine foreknowledge, which historically has held that God possesses comprehensive knowledge of future contingent propositions.²⁴

The overwhelming reason for truncating divine foreknowledge in current theological discussion (especially among openness and process theologians) is to assist in the task of theodicy. In such theodicies, a limited God is absolved from having to remove evils for the simple reason that he is incapable of removing them. But why engage in such theodicies at all? No sound arguments show that divine foreknowledge is logically incoherent. To argue against God knowing future contingent propositions invariably involves questionable assumptions about how the world, though created by God, might nonetheless impede God's knowledge of the future.²⁵ Moreover, divine foreknowledge does not preclude human freedom. If God fore-

knows what I shall choose, then I shall not choose otherwise. It doesn't follow, however, that I can't choose otherwise. As William Lane Craig puts it, "my freely chosen actions . . . supply the truth conditions for the future contingent propositions known by God."²⁶ In contrast to theodicies that attempt to justify God's goodness/benevolence by looking to divine limitation, I'm going to argue that full divine foreknowledge of future contingent propositions is indispensable to a theodicy that preserves the traditional understanding of the Fall (i.e., one that traces all evil in the world back to human sin).

5 The Teleological-Semantic Logic of Creation

Christian theism has traditionally regarded God as omniscient in the sense of possessing perfect knowledge of future contingent propositions and as omnipotent in the sense of being able to act effectively in the world to bring about any result that is not logically impossible. Combined with Newcomb's paradox, divine omniscience and omnipotence now yields an interesting insight into divine action, namely this: God is able to act preemptively in the world, anticipating events and, in particular, human actions, thereby guiding creation along paths that God deems best. In fact, it would display a lack of love and care for the world if such an omniscient and omnipotent creator God did not act preemptively in the world.

Embedded as we are in the world's nexus of cause and effect, such preemptive acts may strike us as counterintuitive. Because we are part of the world's causal nexus and limited in our knowledge, all our actions have unanticipated consequences. Thus, our power of preemption is extremely limited, based not on precise knowledge of the future but on probabilities (which can amount to completely unsubstantiated guesses). As creatures confined to space and time (time here conceived as *chronos*), our activities and those of the rest of physical creation follow a causal-temporal logic that treats time as linear and sees events as unfolding in tightly linked chains of cause and effect. The totality of these causal chains, the causal nexus of nature, has an integrity that does not permit willy-nilly changes. Change the causal nexus at one place, and other changes in cause-effect relations will ramify throughout space and time.

For beings like us embedded in the causal nexus of nature, the logic of cause and effect is inviolable. In contrast, God, as an omnipotent and omniscient being, transcends the physical world and therefore is not bound by this causal-temporal logic. This is not to say that in acting in the world God violates this logic. To violate it, he would need to be under its jurisdiction. But as the creator of nature's causal nexus and therefore as the originator of its causal-temporal logic, God perforce acts in ways that this logic cannot circumscribe. Indeed, if this logic did circumscribe divine action, then God would be part of nature and creation would be other than *ex nihilo*.

Because God knows the future and is able to act preemptively to anticipate future events, divine action properly follows not a causal-temporal logic but a teleological-

²³William Lane Craig, "Divine Foreknowledge and Newcomb's Paradox," *Philosophia* 17 (1987): 331-350, available online at <http://www.leaderu.com/offices/billcraig/docs/newcomb.html> (last accessed January 12, 2006).

²⁴For instance, in *The City of God* (v, 9) Augustine writes, "One who does not know all future things surely is not God."

²⁵For instance, appeals to quantum indeterminacy to undercut divine foreknowledge are highly dubious—as though a deity that creates a world operating by quantum mechanical principles should be limited by those principles.

²⁶*Ibid.*

semantic logic. This teleological-semantic logic treats time as nonlinear (cf. *kairos*) and sees God as acting in the world to accomplish his purposes in accord with the meaning and significance of the events happening in the world. The causal-temporal logic underlying the physical world and the teleological-semantic logic underlying divine action are not at odds—they do not contradict each other. At the same time, they are not reducible to each other.

The causal-temporal logic and the teleological-semantic logic constitute the two logics of creation. The causal-temporal logic is bottom-up and looks at the world from the vantage of physical causality. The teleological-semantic logic is top-down and looks at the world from the vantage of divine intention and action. The causal-temporal logic that underlies the physical world is the organizing principle for natural history (*chronos*). The teleological-semantic logic that underlies divine action is the organizing principle for the order of creation (*kairos*). As noted earlier, young-earth creationism attempts as much as possible to make natural history mirror the order of creation. Divine preemption, by contrast, suggests that natural history need not mirror the order of creation and that the two logics of creation can proceed on independent, though complementary, tracks.

An omniscient and omnipotent God who is able to act preemptively to anticipate human actions will certainly do so to anticipate so momentous a human action as the Fall. To see what's at stake here, suppose you knew with certainty that someone would commit a crime—as in the film *The Minority Report*. You could, as in the film, restrict the prospective criminal's freedom prior to committing the crime. The problem with such restrictions, however, is that up until the crime is committed, the person is literally innocent (i.e., has done no harm). To preempt by restricting the freedom of the would-be criminal is therefore to base legal praxis on the presumption of guilt rather than innocence. Moreover, if carried out consistently, this approach, depending on how many potential criminals are in the society, will require constantly putting people in straitjackets to prevent them from committing crimes. This hardly makes for a carefree and vibrant society.

An alternative approach that avoids these difficulties is for you to take steps prior to the crime to ensure that once it is committed, the person committing the crime is immediately dealt with effectively. With this approach, getting the proper structures in place beforehand so they are set to go once the crime is committed becomes a moral imperative lest the crime go unaddressed. Just what form those preemptive structures take will depend on your purposes. If, for instance, your aim were not punishment but rehabilitation, you might take steps so that the means for rehabilitation were in place prior to the crime being committed.

How, then, does God act preemptively to anticipate the Fall? Before answering this question, we need consider a wrinkle not addressed by Newcomb's Paradox but implicit in the teleological-semantic logic by which God acts in the world. In Newcomb's Paradox, an agent either places or refrains from placing \$1,000,000 in a white box depending on what a box-chooser is going to do. The agent's very act of placing money inside the box, however, does not in any way affect the box-chooser or, for that matter, the rest of

the world until the boxes are opened. The agent's act of placing the money is therefore causally isolated and does not ramify throughout the world as long as the boxes remain unopened.

The problem with this idealized situation is that in the real world there are no causally isolated events. Everything hangs together with everything else, and the slightest change in one thing can fundamentally change the course of history thereafter.²⁷ Thus, by the luck of a draw, a young Dostoevsky is spared execution and becomes the greatest of Russian novelists. Thus, by a butterfly flapping its wings in Brazil, a hurricane is averted in Miami. Thus, by a chance encounter, two people fall in love, marry, and produce children who would otherwise not have existed.

The causal structure of the world is extremely fragile. Indeed, the slightest change makes everything different—if not immediately, soon enough. That's why films like *It's a Wonderful Life*, *Frequency*, and *Timecop* (in decreasing order of excellence), which chart different possible futures but keep too many features of the world constant, make for entertaining fiction but are completely unrealistic. As with such films, Newcomb's Paradox, as originally formulated, does not factor in the fragility of the world's causal nexus. When we do factor it in, however, and try to understand what it would mean for God to act preemptively by anticipating future events, we come face to face with what I call the *infinite dialectic*.

Think of the infinite dialectic in this way: Suppose God acts to anticipate certain events. So long as divine action is not a hollow concept, God's actions make a difference in the world and therefore must induce novel events (all change in the physical world being mediated through events). But this requires that God act preemptively to anticipate the novel events induced by God's prior actions (priority here being conceived not temporally or causally [*chronos*] but in terms of the teleological-semantic logic [*kairos*] by which God orders the creation). And yet, such actions by God now induce still further novel events. And so on. This up and back between divine action and creaturely causation proceeds indefinitely. It constitutes an infinite dialectic. In the infinite dialectic, God does not so much act *in* the world as *across* the world (*across* both space and time).

Because of the fragility of the world's causal nexus, the infinite dialectic is ever in danger of spinning out of control, degenerating into a positive feedback loop in which divine preemption needs to rectify difficulties raised by (logically) prior acts of divine preemption. Consequently, only an infinitely powerful and infinitely wise God can pull off the infinite dialectic. The infinite dialectic renders divine action at once real-time and eternal. It bridges the immanent with the transcendent. In the infinite dialectic, God acts on the whole of creation at all times and in all places, acting not as a cause among other causes (God does not moonlight as a physical cause) but as a *cause of*

²⁷This is the lesson of nonlinear dynamics as well as of quantum mechanics. See respectively James Gleick, *Chaos: Making a New Science* (New York: Viking, 1987) and David Bohm, *Wholeness and the Implicate Order* (London: Routledge & Kegan Paul, 1980).

causes (God causes physical causes to fulfill his purposes). As a cause of causes, God's action in the infinite dialectic is not merely ontological, in the sense of giving being to the world (cf. Paul Tillich's "ground of being"). Nor is it merely providential in a general sense, as might be subsumed under the regularities of nature (cf. God maintaining seasonal weather patterns).

In the infinite dialectic, God acts providentially to guide the world in its particulars, taking an active interest in the details of this world and making a difference at all levels of the created order. This is not to say that God is a micromanager. Good managers know the precise details of the system they are managing but intervene sparingly, giving the system as much autonomy as it needs to flourish. God is a good manager. In particular, he has not created the world to be his prosthesis or puppet. At the same time, even though God has granted the world a measure of autonomy, the world's autonomy is not absolute. Just as an orchestra cannot make do without the conductor's continual guidance, so too does the world require God's continual guidance. That guidance is neither dispensable nor coercive. It is real and powerful, and it takes the form of an infinite dialectic. Because of the infinite dialectic, Jesus can say that God knows our name, numbers the hairs on our head, and monitors the sparrow that falls to the ground.

6 A Kairological Reading of Genesis 1–3

Having distinguished the teleological-semantic logic of creation from the causal-temporal logic of the physical world, we are now in a position to offer a reading of Genesis 1–3 that reconciles a traditional understanding of the Fall (which traces all evil in the world to human sin) with a mainstream understanding of geology and cosmology (which regards the Earth and universe as billions of years old, and therefore makes natural evil predate humanity). The key to this reading is to interpret the days of creation in Genesis as natural divisions in the teleological-semantic logic of creation. Genesis 1 is therefore not to be interpreted as ordinary chronological time (*chronos*) but rather as time from the vantage of God's purposes (*kairos*). Accordingly, the days of creation are neither exact 24-hour days (as in young-earth creationism) nor epochs in natural history (as in old-earth creationism) nor even a literary device (as in the literary-framework theory).²⁸

Rather, the days of creation in Genesis are actual (literal!) episodes in the divine creative activity. They represent key divisions in the divine order of creation, with one episode building logically on its predecessor. As a consequence, their description as chronological days needs to be viewed as an instance of the common scriptural practice of employing physical realities to illuminate deeper spiritual realities (cf. John 3:12). John Calvin referred to this practice as God condescending to our limited understanding. The justification for this practice is that the physical world, as a divine creative act, provides a window into the life and mind of God, the one who created it. (The general principle

here is that the things one makes and does invariably reveal something about oneself.)

Because the Genesis days represent key "kairological" divisions in the teleological-semantic logic of creation, a widely cited reason for treating the days of creation as strict 24-hour periods dissolves. Young-earth creationists sometimes insist that the author of Exodus, in listing the Ten Commandments, could only be justified in connecting sabbath observance to the days of creation if the days of creation were successive 24-hour chronological days (see Exodus 20:11 where sabbath observance is justified by noting that God created the world in six days and rested on the seventh). But if the days of creation are kairological, referring to basic divisions in the divine order of creation, then sabbath observance reflects a fundamental truth about the creation of the world. Specifically, since days form a basic division in the way humans experience time, sabbath observance becomes a way of getting us, who are made in the image of God, to recognize the significance of human work and rest in light of God's work and rest in creation. Without this sabbatarian perspective, we cannot understand the proper place of work or rest in human life.

Yet, from a purely chronological perspective, there is nothing particularly fitting or distinctive about God creating the world in six 24-hour days. God could presumably have created the same world using very different chronologies (in his *Literal Commentary on Genesis*, Augustine entertains the possibility of God creating everything in one chronological instant). By contrast, a kairological interpretation of the Genesis days gives greater force to sabbath observance, requiring humans to observe the sabbath because it reflects a fundamental reality about how God created the world and not because it underscores a purely contingent fact about the chronology of creation (a chronology which God could have altered in any number of ways to effect the same purposes in creation).

A kairological interpretation of the six days of creation is unashamedly anthropocentric. Genesis clearly teaches that humans are the end of creation. For instance, Genesis describes the creation as merely "good" before humans are created but describes it as "very good" only after they are created. God's activity in creation is therefore principally concerned with forming a universe that will serve as a home for humans. Although this anthropocentrism sits uneasily in the current noetic environment, it is not utterly foreign to it. Indeed, the intelligibility of the physical world by means of our intellects and, in particular, by means of such intellectual feats as mathematics suggests that we live in a meaningful world whose meaning was placed there for our benefit.²⁹

To raise anthropocentrism in theological discussions often elicits the charge of humans creating God in their own image. Although there is a danger here, contemporary theological discussions have vastly overblown this danger.

²⁸See, for instance, David G. Hagopian, *The Genesis Debate: Three Views on the Days of Creation* (Mission Viejo, Calif.: Crux Press, 2001).

²⁹See Benjamin Wiker and Jonathan Witt, *A Meaningful Universe: How the Arts and Sciences Reveal the Genius of Nature* (Downers Grove, Ill.: Intervarsity, 2006), especially ch. 4. See also Mark Steiner, *The Applicability of Mathematics as a Philosophical Problem* (Cambridge, Mass.: Harvard University Press, 1999).

Precisely because humans are made in the image of God and because humans are the end of creation and because the Second Person of the Trinity was incarnated as a human being, our humanity (especially in light of Christology) is the best window into understanding God. This is not to say that we ever exhaustively comprehend God. But it is to say that knowledge of our humanity provides accurate knowledge of the Godhead.³⁰

A kairological interpretation of the creation days in Genesis now proceeds as follows: On the first day, the most basic form of energy is created: light. With all matter and energy ultimately convertible to and from light, day one describes the beginning of physical reality.³¹ With the backdrop of physical reality in place, God devotes days two and three to ordering the Earth so that it will provide a suitable home for humanity. On these days, God confines the Earth's water to appropriate locations and forms the plants on which humans and other animals will depend for their sustenance. On day four, God situates the Earth in a wider cosmic context. On day five, animals that inhabit the sea and sky are created. And finally, on day six, animals that inhabit dry land are created, most notably human beings. Finally, on day seven, God rests from his activity in creation. To be sure, Genesis 1 omits and abbreviates many details of creation. Nor does it provide insight into how the divine purposes of creation were implemented chronologically. Even so, here is the gist of creation as viewed kairologically.

The key question that now needs to be addressed is how to position the Fall within this kairological view of creation. In answering this question, we need to bear in mind that Genesis 1 describes God's *original* design plan for creation. The Fall and its consequences, in constituting a subversion of that design plan through human rebellion, elicits no novel creative activity from God. The Fall repre-

sents the entrance of evil into the world, and evil is always parasitic, never creative. Indeed, all our words for evil presuppose a good that has been subverted. Impurity presupposes purity, unrighteousness presupposes righteousness, deviation presupposes a way (i.e., a *via*) from which we've departed, sin (the Greek *hamartia*) presupposes a target that was missed, etc. This is not to deny or trivialize evil. Rather, it is to put evil in its proper place.

God's immediate response to the Fall is therefore not to create anew but to control the damage. In the Fall, humans rebelled against God and thereby invited evil into the world. The challenge God faces in controlling the damage resulting from this original sin is how to make humans realize the full extent of their sin so that, in the fullness of time, they can fully embrace the redemption in Christ and thus experience full release from sin. For this reason, God does not merely allow personal evils (the disordering of our souls and the sins we commit as a consequence) to run their course *subsequent* to the Fall. In addition, God also brings about natural evils (e.g., death, predation, parasitism, disease, drought, famines, earthquakes, and hurricanes), letting them run their course *prior* to the Fall. Thus, God himself disorders the creation, *making it defective on purpose*. God disorders the world not merely as a matter of justice (to bring judgment against human sin as required by God's holiness) but even more significantly as a matter of redemption (to bring humanity to its senses by making us realize the gravity of sin).

A kairological reading of Genesis preserves the young-earth creationist emphasis on tracing all evil in the world to human sin: God creates a perfect world, God places humans in that world, they sin, and the world goes haywire. But this raises the question how to make sense of the Fall chronologically. Humans do not merely exist kairologically in the divine mind; they exist chronologically in space and time, and the Fall occurred in space and time. To understand how the Fall occurred chronologically and how God acts preemptively to anticipate the Fall by allowing natural evils to rage prior to it, we need to take seriously that the drama of the Fall takes place in a *segregated area*. Genesis 2:8 refers to this area as a garden planted by God (i.e., the Garden of Eden). Now, ask yourself why God would need to plant a garden in a perfect world untouched by natural evil. In a perfect world, wouldn't the whole world be a garden? And why, once humans sin, do they have to be expelled from this garden and live outside it where natural evil is present?

Proponents of the Documentary Hypothesis for the Pentateuch ("JDEP") describe the juxtaposition of Genesis 1:1–2:3 and Genesis 2:4–3:24 as a kludge of two disparate and irreconcilable creation stories (the days of creation vs. humanity's creation and fall in the Garden).³² But in fact, the second creation account, situated in the Garden, is just what's needed for *kairos* and *chronos* to converge in the Fall. If we accept that God acts preemptively to anticipate the Fall, then in the chronology leading up to the Fall, the

³⁰The view presented here is thus at odds with extreme forms of "negative theology" in which the knowledge of God consists in what can (and on this view must) be denied of the deity. Rudolf Otto's *Mysterium Tremendum* is a case in point. The problem with a purely negative theology is that it is self-referentially incoherent. G. K. Chesterton made this point as follows: "We do not know enough about the unknown to know that it is unknowable." (See G. J. Marlin, R. P. Rabatin, and J. L. Swan (eds.), *The Quotable Chesterton* (Garden City, N.Y.: Image, 1987), 336.) Christian orthodoxy has always balanced an apophatic theology with a kataphatic theology. Apophatic theology recognizes that none of our concepts can fully encompass God and thus approaches the knowledge of God via negations. Kataphatic theology, on the other hand, recognizes that negation, if pushed too far, becomes a positive affirmation of divine inscrutability and thus emphasizes the need for positive affirmations about God that are accurate as far as they go but can only go so far.

³¹Some scholars see God as bringing physical reality into being in Genesis 1:1 and then interpret the days of creation as God organizing this brute unformed physical reality (described in Genesis 1:2 as "formless and void"). Nothing in my kairological reading of Genesis 1 is fundamentally changed on this view. There are, however, exegetical reasons for preferring the approach I am taking, which identifies the origin of physical reality with the creation of light on day 1. See, for instance, Marguerite Shuster's sermon on Genesis in Paul K. Jewett, ed., *God, Creation, and Revelation: A Neo-Evangelical Theology* (Grand Rapids: Eerdmans, 1991), 506–512.

³²See Eugene Maly, "Introduction to the Pentateuch," in Raymond Brown, Joseph Fitzmyer, and Roland Murphy, eds., *Jerome Biblical Commentary* (Englewood Cliffs, N.J.: Prentice-Hall, 1968), 1:3–4.

world has already experienced, in the form of natural evil, the consequences of human sin. This seems to raise a difficulty, however, because for humans who have yet to sin to come into a world in which natural evil rages seems to put them at a disadvantage, tempting and opposing them with evils for which they are not (yet) responsible. The Garden of Eden, as a segregated area in which the effects of natural evil are not evident (one can think of it as a tropical paradise), provides the way out of this difficulty.

The essential point of the Fall is not the precise physical backdrop against which Adam and Eve play out their drama in the Garden but rather their phenomenological experience of willfully turning against God. Think of the hardware-software distinction in computer science. Different computer hardware (cf. different possible physical backdrops for creation) can run the same software (cf. the phenomenological experience of willfully turning against God). Perhaps one piece of hardware is state-of-the-art whereas the other is old and unreliable. Nonetheless, for a given software application, they may both run equally well, performing the required operations accurately. By analogy, one can imagine a “perfect creation” that has a segregated area in which Adam and Eve turn willfully against God and for which everything, both inside and outside that area, is perfect prior to the Fall (cf. the state-of-the-art computer). Alternatively, one can imagine an “imperfect creation” that has a segregated area in which Adam and Eve have exactly the same phenomenological experience of turning willfully against God as in the “perfect creation,” but for which only this segregated area is “perfect”—the perfection in this case being strictly in the phenomenological sense of no evil overtly tempting or opposing Adam and Eve (cf. the old unreliable computer that nonetheless can perform at least one software application well).

In the Garden of Eden, Adam and Eve simultaneously inhabit two worlds. Two worlds intersect in the Garden. In the one world, the world God originally intended, the Garden is part of a larger world that is perfect and includes no natural evils. In the other world, the world that became corrupt through natural evils that God brought about by acting preemptively to anticipate the Fall, the Garden is a safe haven that in the conscious experience of Adam and Eve (i.e., phenomenologically) matches up exactly with their conscious experience in the perfect world, the one God originally intended. In the originally intended world, there are no pathogenic microbes and, correspondingly, there is no need for Adam and Eve to have an immune system that wards off these microbes. In the imperfect world, whose imperfection results from God acting preemptively to anticipate the Fall, both pathogenic microbes and human immune systems exist. Yet, in their garden experience, Adam and Eve never become conscious of that difference. Only after they sin and are ejected from the Garden do they become conscious of the difference. Only then do they glimpse the world they might have inhabited but lost, a world symbolized by the tree of life. Only then do they realize the tragedy they now face by being cast into a world full of natural evil and devoid of a tree that could grant them immortality.

Why doesn't God grant Adam and Eve immortality despite the Fall? The ancient myth of Tithonus and Eos cap-

tures what's at stake. Eos (Latin Aurora), the goddess of dawn, is married to Tithonus, who is human and mortal. She asks Zeus to make Tithonus immortal but forgets to ask that Zeus also grant him eternal youth. As a consequence, Tithonus grows older and older, ultimately becoming completely decrepit. The lesson here is that immortality and corruption don't mix—instead of attenuating corruption, immortality intensifies it. In enforcing mortality on humans by ejecting them from a garden that has a source of immortality (the tree of life) at its center, God limits human corruption and, in the protevangelium (Genesis 3:15), promises a way out of that corruption. Thus, given our corruption through sin, mortality is a grace and benefit.

A final question now remains: How did the first humans gain entry to the Garden? There are two basic options: progressive creation and evolving creation.³³ In the first, God creates the first humans in the Garden. In the second, the first humans evolve from primate ancestors outside the Garden and then are brought into the Garden. Both views require direct divine action. In the former, God specially creates the first humans from scratch. In the latter, God introduces existing human-like beings from outside the Garden but then transforms their consciousness so that they become rational moral agents made in God's image. With an evolving creation, this transformation of consciousness by God on entry into the Garden is essential to the kairological reading of Genesis. For if the first humans bore the full image and likeness of God outside the Garden prior to the Fall, they would have been exposed to the evils present there—evils for which they were *not yet* responsible. This would be problematic since humanity's responsibility and culpability in the Fall depends on the Fall occurring without undue temptations or pressures. These temptations and pressures are absent in the Garden but not outside.

7 Epilogue: The Problem of Good

In this paper I have focused on the problem of evil. To resolve the problem of evil, I proposed a kairological reading of Genesis that looks to the teleological-semantic logic by which God acts in creation. According to this logic, God is able to act preemptively in the world, anticipating events and, in particular, human actions. In acting preemptively, God does not hinder the exercise of human freedom but rather anticipates the consequences of its exercise. The kairological reading of Genesis described in this paper preserves the classic understanding of Christian theodicy, according to which all evil in the world ultimately traces back to human sin at the Fall. Moreover, having preserved this classic understanding of the Fall, this reading of Genesis also preserves the classic Christian understanding of God's wisdom and particular providence in creation.

In focusing on divine preemption as the means by which God anticipates the Fall and controls its damage, I have stressed the active role God played in bringing about

³³For these options, see respectively Fazale Rana and Hugh Ross, *Who Was Adam? A Creation Model Approach to the Origin of Man* (Colorado Springs, Colo.: Navpress, 2005) and Keith Miller, ed., *Perspectives on an Evolving Creation* (Grand Rapids, Mich.: Eerdmans, 2003).

natural evil prior to the Fall. Natural evil mirrors the personal evil in our souls brought on through the distorting power of sin. Accordingly, a world that exhibits natural evil becomes an instrument for revealing to us the gravity of sin. In particular, the emergence of living forms through a violent and competitive historical process (be it through a sequence of special creations or through a more continuous evolutionary development) does itself exhibit natural evil attributable to the Fall. The theodicy proposed in this essay therefore does nothing to soft-pedal natural evil. It is as stark as the Darwinian view, which regards evolution as a “great battle for life” (Darwin’s own choice of words) and nature as “red in tooth and claw” (words of Darwin’s compatriot Alfred Lord Tennyson).³⁴

And yet, the theodicy I propose here also allows God’s grace and mercy to break through in nature. Although divine preemption can account for why natural evils occur prior to the Fall, divine preemption is not limited to bringing about natural evils. The world is a cosmos, an ordered arrangement meant to reflect the glory of God. The natural evil that God (preemptively) introduced into the world on account of the Fall clouds the world’s ability to reflect God’s glory but it can never entirely occlude it. Indeed, God’s original intention for creation always has a way of bleeding through regardless of the pervasiveness of personal and natural evil. Moreover, in responding preemptively to the Fall, God does not merely bring about natural evil but also, as a matter of common grace, stems its influence. Yes, pathogenic microbes constitute a natural evil brought on by God in response to the Fall. But God doesn’t just leave us at the mercy of these microbes. Our immune system is an amazing work of common grace by which God, acting preemptively, mitigates the harm these microbes would otherwise cause us.³⁵

With God, evil never has the final word. The tree of life, which Adam and Eve could not reach because they were expelled from the Garden, appeared again 2,000 years ago as a cross on a hill called Golgotha.³⁶ Through the Cross of Christ, the immortality that eluded humanity in the Garden is restored. Evil is but a temporary feature of the world. Created as it is by God, the world is destined to fulfill God’s good purposes. More than any other problem, people have used the problem of evil to distance God from themselves and even to rationalize that God doesn’t exist. In response, Boethius posed the following riddle: “If God exists whence evil; but whence good if God does not ex-

ist?”³⁷ Let us always bear in mind that the problem of evil is part of a much larger problem, namely, the problem of a benevolent God restoring a prodigal humanity to himself. This is the problem of good, and it subsumes the problem of evil.

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³⁴See respectively Charles Darwin, *On the Origin of Species*, facsimile 1st ed. (1859; reprinted Cambridge, Mass.: Harvard University Press, 1964), 129 and Tennyson’s universally accessible “In Memoriam.”

³⁵For a fascinating and accessible introduction to immunology, see Lauren Sompayrac, *How the Immune System Works*, 2nd ed. (Malden, Mass.: Blackwell, 2003).

³⁶It is perhaps not coincidental that the tree of life was positioned at the center of the Garden and that the tree on which Christ was crucified was positioned at Jerusalem, effectively the center in the Promised Land. In *Genesis Unbound* (Sisters, Oregon: Multnomah, 1996), John Sailhamer offers an interesting argument identifying the Garden with the Promised Land.

³⁷Boethius, *The Consolation of Philosophy*, in *Loeb Classical Library* (Cambridge, Mass.: Harvard University Press, 1973), 153.

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Faculty in theology and science at the C. S. Lewis Summer Institute, Cosmos and Creation. Cambridge University, Queen's College, 10-23 July 1994.
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The Nature of Nature, conference at Baylor University, 12-15 April 2002, organized by WmAD and Bruce Gordon.
Seminar Organizer, "Design, Self-Organization, and the Integrity of Creation," Calvin College Seminar in Christian Scholarship, 19 June - 28 July 2000. Follow-up conference 24-26 May 2001 (speakers included Alvin Plantinga, John Haught, and Del Ratzsch).
Contributor, "Prospects for Post-Darwinian Science," symposium, New College, Oxford, August 2000. Other contributors included Michael Denton, Peter Saunders, Mae-Wan Ho, David Berlinski, Jonathan Wells, Stephen Meyer, and Simon Conway Morris.
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Freeing Inquiry from Ideology: A Michael Polanyi Reader, co-edited with Bruce Gordon; an anthology of Michael Polanyi's writings; book under contract with InterVarsity Press.

Uncommon Dissent: Intellectuals Who Find Darwinism Unconvincing, edited collection of essays by intellectuals who doubt Darwinism on scientific and rational grounds; book under contract with Intercollegiate Studies Institute.

The End of Christianity, coauthored with James Parker III, book under contract with Broadman & Holman.

Of Pandas and People: The Intelligent Design of Biological Systems, academic editor for third updated edition, coauthored with Michael Behe, Percival Davis, Dean Kenyon, and Jonathan Wells.

Being as Communion: The Metaphysics of Information, Templeton Book Prize project, proposal submitted to Ashgate publishers for series in science and religion.

The Patristic Understanding of Creation, co-edited with Brian Frederick; anthology of writings from the Church Fathers on creation and design.