

## **The Singular Universe and the Triune God: Cosmology, Science and Creation**

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We are living in an era when it is particularly hard to be either a theist or an atheist.

In the last part of the talk I'm going to suggest that this rather strange double difficulty is at least in part because Western culture has been shaped by some deep-seated mistakes about the nature of God and his relationship to creation, and that the way to correct them isn't to invent some new understanding of God, but to recover what the earliest Christians thinkers were trying to get at in formulating the doctrine of the trinity. That doctrine, I will suggest, far from being a piece of theological obscurity, (counter-intuitive as it is, like much of reality) is as foundational to our lives, as quantum mechanics.

But first let us explore the difficulties with being either a theist or an atheist. I am using those words in the normal way: a theist is one who believes that behind the reality of the universe, underlying it and giving its purpose and character, is the reality of a God who is its Creator. Thus *theism*, from the Greek word *theos*, means literally an "ism" or a way of life based on belief in God.

An atheist, on the other hand, is one who believes that if anything underlies the reality of the universe, giving it its purpose and character, it is not a personal God. Thus the word atheism means literally an "ism" or a way of life based on belief in no God.

Why are these difficult times for holders of these respective "isms"? There are two sets of reasons in each case--one set drawing on our experience of what it means to be human person; the other drawing on our experience of the world and what science increasingly discovers it to be. Perhaps we could call the first set "inner" reasons, and the second set "outer".

Many find it hard to be a theist nowadays for both an inner and an outer reason. The inner reason has to do with a general revulsion at things that are done in the name of God, whether that God be named Jehovah, Christ, or Allah. The September 11 terrorist attacks have focused this revulsion well. The argument is that belief in God as a being of absolute power, wisdom and righteousness encourages in the believer a conviction of his own power wisdom, and righteousness, and of those who believe like him (I use the masculine pronoun deliberately here, for it is widely assumed that belief in a transcendent masculine deity justifies belief in masculine supremacy--as Mary Daly famously put it, "If God is a male, then all males are God"). In short, belief in God encourages fundamentalisms of one sort or another, and fundamentalisms are notorious for conducting inquisitions and holy wars, bombing abortion clinics and burning Harry Potter books. As British scientist Richard Dawkins (author of works like "The Selfish Gene" and "The Blind Watchmaker"), quite content to be called an atheist, put it shortly after September 11: "To fill a world with religion, or religions of the Abrahamic kind, is like littering the streets with loaded guns. Do not be surprised if they are used."

There is a widely-held set of “outer” reasons for not being a theist as well, and they have to do with the foundational tenet of all theisms: belief that God is the Creator. This belief is being challenged by the gradual discovery of a wide variety of “natural” or “scientific” explanations for various aspects of the universe. Human consciousness and emotion can be explained in neuro-chemical terms; ethical tenets and religious impulses (say sociobiologists like Dawkins) in terms of their survival value for “the selfish gene”; we seem to be closing in on the chemical bases of life, and Darwin’s theory (despite many attempts to argue otherwise) has given us a spectacular tool for understanding how living things have evolved, are related to each other, and to the cosmos. We can explain the existence of stars, planets, matter itself by reference to the behaviour of the cosmic fireball of “the big bang”, and though “the big-bang itself, the evidence for a beginning of the universe was something of a blow to atheists and an encouragement to theists for a while, researchers and theorists like Alan Guth and Steven Hawking working on the relationship between quantum events and cosmology, have suggested ways of explaining even that primal event. Perhaps, says Alan Guth, is “just one of those things that happen from time to time.” If there is a God, observed Hawking towards the end of *A Short History of Time*, “there doesn’t seem to be anything for him to do.”

As biologist--and, theist-- Cambridge Arthur Peacocke has said describing our growing understanding of the universe from “the big bang” to the human mind:

A notable aspect of this picture is the seamless character of the web which has been spun on the loom of time: the process is continuous from beginning to end and at no point does the modern natural scientist have to invoke any non-natural causes to explain what he observes or infers about the past.

It is no surprise that sentences like this have made many Christians uncomfortable. It seems to present us (for let me make it clear that I am speaking as a Christian theist) with a situation infinitely worse than Darwin. Christians have been fighting rear-guard actions against this sort of thing for almost a century and a half now. The most famous battle was the Tennessee Scopes Monkey Trial in the 1920s, but various Christians, scientific and other wise, have tried nobly to find somewhere in creation a kind of smoking gun in the hand of the Creator. The results have been less than spectacular. They include things like the attempt to explain away the evidence of age in the universe by speculations on changes in the speed of light; or flood geology, which suggests that the reason we find fossils on mountaintops and sedimentary strata laid down all over the world, is that a worldwide flood put them there; or that in a river in Texas we find human footprints and dinosaur footprints side by side. a more intellectually honest position argues that God made the earth with an appearance of being old; Adam had a navel; the famous tree in Eden had annual; growth rings even though it was created a week earlier, and so forth. Few Christians are enthusiastic about that option, but at least it doesn’t fudge the facts like the other options do..

More recently a much more sophisticated Christian movement called Intelligent Design has seen the apparent information content of DNA as an evidence that since the cell seems to be programmed, there must be a cosmic programmer, that is, God. But though I am deeply sympathetic to the people in these movements, I find them unconvincing--as does most of the scientific community. Well-meant Christian attempts to refute scientific accounts of origins have not fared very well.

Atheists however should not take heart. There are some stiff challenges to atheism as well. Once again, they are of two sorts, “inner” and “outer”. The inner difficulties are both psychological and philosophical. Psychologically--or perhaps I should say, “spiritually”--the problem is this: the only real alternative to belief that the universe was made by a Creator is the belief that it made itself. And that’s not much of an alternative. As Paul Davies observes, “Although many metaphysical and theistic theories seem contrived or childish, they are not obviously more absurd than the belief that the universe exists, and exists in the form it does, reasonlessly.” Its hard to be a human person in an reasonless universe, a universe which is in effect a spectacular accident. As Jacques Monod put it in *Chance and Necessity*: “Man at last knows that he is alone in the unfeeling immensity of the universe, out of which he emerged only by chance.” Or consider Steven Weinberg’s observation in *The First Three Minutes*, that “the more the universe seems comprehensible, the more it seems pointless.”[Danielson, 437]

Or, as Bertrand Russell famously wrote in *a Free Man’s Worship* at the beginning of the 20th century:

That man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms. . . that the whole temple of man’s achievement must inevitably be buried beneath the debris of a universe in ruins--all these things, if not quite beyond dispute, are yet so nearly certain that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul’s habitation henceforth be safely built.

This didn’t seem to bother Russell much at the time. “Nobody worries much about what’s going to happen millions of years from now” he said. But it is a nagging worry at the back of most people’s minds. The “firm foundation of unyielding despair”, even when built on by lots of shopping malls and other post-modern entertainments, doesn’t yield a very spacious dwelling for a person or a culture.

There is another inner problem of a more philosophical sort. The universe may be (as Bertrand Russell put it) “an accidental collocation of atoms,” but that meaningless status therefore extends to all the arguments, scientific and otherwise, which seem to establish that fact. The claim that the universe is without meaning would seem to undercut all other claims to meaning.

Which leads us to the set of what I call “outer” difficulties for atheism. Although (as I have already said) we have been pretty spectacularly successful at finding “natural” explanations for everything in the universe, at the same time we are become increasingly aware of the deep *oddness* of many of those most foundational natural features. There is no particular reason for example, that the rate of expansion of the expanding universe, in the first instants of its existence, had to be what it was. Yet if it had been infinitesimally slower, it would have collapsed back before stars could form; if it had been infinitesimally faster, it would have not allowed for the condensation of matter which produced stars. Or if the force holding the nucleus together had been a little different one way or another the hydrogen atom would not be stable and there would have been nothing that we could call “matter” in the universe, let alone stars, or, eventually, life.

Owen Gingerich, a Senior Astronomer at the Smithsonian Astrophysical Observatory, and Professor of Astronomy at Harvard, explains a somewhat more subtle one of these “curious details of the cosmos” as he puts it: the nuclear resonance which allows atomic nuclei to stick together is particularly fortuitous in the case of carbon and oxygen. “Had the resonance level in carbon been 4 % lower, there would be essentially no carbon. Had that level in the oxygen been only half a percent higher, virtually all the carbon would have been converted to oxygen. Without that carbon abundance, none of us would be here.” The late British Astronomer Fred Hoyle is said to have remarked that nothing shook his atheism so much as the discovery of this coincidence. He later explained precisely in *Engineering and Science*, the Cal Tech alumni magazine:

Would you not say to yourself ‘some super-calculating intellect must have designed the properties of the carbon atom, otherwise the chance of finding such a atom through the blind forces of nature would be utterly minuscule?’ Of course you would. . . a common sense interpretation of the facts suggests that a superintellect has monkeyed with physics, as well as with chemistry and biology, and that there are no blind forces worth speaking about in nature. The numbers one calculates from the facts seem to me so overwhelming as to put this conclusion almost beyond question. [Danielson, p. 525].

Cosmologist Lee Smolin, in a book called *The Life of the Cosmos*, considers the nature and interaction of the four basic forces--gravity, electromagnetism, and the strong and weak nuclear forces. He concludes (with an argument that I won’t reproduce here) that the forces have to be pretty much what they are in order for matter--and for stars--to exist. But there is no particularly reasons that they should be what they are--as a consequence, he suggests that the possibility of stars existing in the universe (and they are only one step in forging the elements necessary for life) is one in 10 to the 229th power. To put that absurd number in perspective, he notes that all the stars we can see from the earth number about 10 to the 22nd, and they contain about 10<sup>80</sup>th protons and neutrons. Large as they are, the greater number--which, once again describes the chance that stars would even be possible, is absurd.

Now: I am not giving you all these numbers as though they were the smoking gun that proves the Creator. In fact in most cases the scientists who have discovered them do not find them particularly persuasive of the existence of Creator. They look rather to other explanations. One of those is “the Anthropic Principle”.

The Anthropic Principle says that If any one of these constants had been infinitesimally different (as they could have been), we wouldn’t be here. The anthropic principle is not an argument for the existence of a Creator, or a purpose, but a rather tautological statement that all of these features had to be the way they are in order for us to be here to observe them. Since we are here to observe them, that’s the way they were--once again, we’re back to Guth’s description of the universe with all its finely-tuned features as just one of those things that happen from time to time. Innumerable other universes have undoubtedly happened (perhaps, some suggest there are innumerable parallel universes), but we seem to have hit the jackpot with this one. But on one level there is nothing “un” or “super” natural about it.

Now it is not my purpose to try to make these vast coincidences into an argument for the existence of God. It may well be that the “seamless web” of explanation which some Christians find so troubling will eventually be extended to explain even the setting of those fantastically finely tuned physical constant. The point is--it’s highly forced to avoid some sense of astonishment, wonder, and even thankfulness. [In my earlier lecture today I argued that science is rooted in wonder and awe]. This point is made vividly by philosopher Richard Swinburne, by analogy of the existence of the universe with escape from a firing squad:

On a certain occasion the firing squad aim their rifles at the prisoner to be executed. There are twelve expert marksmen in the firing squad, and they fire twelve rounds each. However, on this occasion all 144 shots miss. The prisoner laughs and comments that the event is not something requiring any explanation because if the marksmen had not missed, he would not be here to observe them having done so. But of course the prisoner’s comment is absurd; the marksmen all having missed is indeed something requiring explanation; and so to is what goes with it--the prisoner being alive to observe it. . . .[Danielson, 442]

In fact the universe is an astonishingly odd place. It may not exactly require belief in God--recall that “seamless web” of explanation which Peacocke alludes to. But the convinced anti-theist cannot help but be made uneasy by this surpassing uniqueness of the universe.

One of the terms which cosmologists have used to describe the beginning of the universe is that was a singularity, defined as a place of infinite density, which is utterly opaque to our investigation or speculation, and where known scientific laws do not apply. The universe, so far as we can tell, has expanded from such a singularity, and it is in its entirety, itself a unique event and place. The anthropic principle, in its various formulations, weak and strong, is an attempt to account for that uniqueness without invoking a Creator.

Nobody is quite sure what to do with the anthropic principle. Certainly the churches near scientific research centres are no fuller than they used to be. But they’re no emptier either. a recent study of the religious belief of scientists asked of a broad range of scientists in many fields the same questions about their faith or non-faith as were asked in a survey near the beginning of the twentieth century. The questions included ones like, “do you believe in a personal God who answers prayer?” a hundred years ago a little less than half of the scientists surveyed said “yes”; in the recent survey the numbers were almost exactly the same. So none of the vast scientific findings of the last century, none of the weaving of that nearly seamless web of explanation which Peacocke speaks of, seems to have made much difference.

The evidence from the universe leaves us as mixed up as ever as to who or what or whether God is. Or, for that matter, who or what or whether *we* are. The human self continues to be the real mystery, a point well made in the late novelist Walker Percy’s marvelous book *Lost in the Cosmos*. He begins his book with epigraphs from an unlikely pair, St. Augustine and Nietzsche. Nietzsche wrote, “We are unknown, we knowers, to ourselves. . . . And Augustine said almost the same thing a century and a half earlier, but significantly, as a prayer: “O God, I pray you let me know myself.” Confusion about the purpose and meaning of the universe is inevitably accompanied by confusion about the

purpose and meaning of the self. So Percy modestly offers *Lost in the Cosmos*, which he modestly offers as the “last self-help book, designed, in his words to help you survive in the Cosmos “about which you know more and more while knowing less and less about yourself, this despite 10,000 self-help books, 100,000 psychotherapists and 100 million fundamentalist Christians.” As Percy asks in his preface to his book,” Why is it that of all the billions and billions of strange objects in the Cosmos--novas, quasars, pulsars, black holes--you are beyond doubt the strangest?” and again, stretching history a bit: How is it possible for the man who designed Voyager 19, which arrived at Titania, a satellite of Uranus, three seconds off schedule and a hundred yards off course after a flight of six years, to be one of the most screwed-up creatures in California--or the Cosmos?

So there it is: there are strong inner reasons not to believe in God: believers in God have a long history of turning tyrannical and start acting like God--or like they think God would act. On the other hand there is an inner reason to believe in God: we all know pretty passionately that we are more than an accident, and that passionate conviction grates harshly against the premise that the universe is accidental. When we look outside us at the universe, we find that we can explain almost every aspect of the universe in terms of natural causes--till we look at what we have explained, and find it is almost impossibly unlikely. I am reminded of the chapter titles of a brilliant book some decades ago by the American anthropologist Loren Eiseley. Eiseley was speaking of the slow discovery of process--long and ancient process--in every aspect of creation, that characterized the 18th and 19th century culture. His chapter on geology, focusing on James Hutton, is called “How the world became natural”; His chapter on the discovery of extinctions and the true nature of fossils is called “How Death became Natural”; His chapter on The Origin of the Species, “How Life became Natural”; on human evolution, “How Man became Natural”. But then, at the very end, he asks the necessary question: “How Natural is Natural?”

I am not completely satisfied with his answer: but it is quite definitely the right question. We have succeeded spectacularly in giving a “natural” explanation for everything--except ourselves, the explainer. The real clue to the escape from the dilemma I have been trying to sketch for us is in that rough distinction I began with, between “inner--that is subjective, moral, ethical, emotional--reasons to be a theist or an atheist--and “outer”--objective, empirical, scientific reasons. Science is, as Michael Polanyi and others have profoundly proven, an intensely personal activity: as it explores and explains the “outer” world, it does so from within the “inner” world of beliefs, commitments, convictions and passions.

“We are unknown, we knowers to ourselves” wrote Nietzsche. “God, let me know myself” prayed Augustine. It is persons who produce natural explanations of the world. Yet persons cannot be reduced or destroyed by those natural explanations if the explanations themselves are to remain valid.

The world seems to get along fine without God; on the other hand, God seems to be necessary if we are to make sense of the world. It is not a popular idea. Percy recounts an incident from a Harvard lecture:

Several years ago the great Australian neurobiologist, Sir John Eccles, ended a Harvard lecture on brain organization by admitting that although evolution could account for the brain, it could not, in his view, account for the mind, with its mysterious capacity for consciousness and thought; only something transcendent could account for that. The audience began hissing.

Why did they hiss? Perhaps because such a suggestion goes so deeply against the premise of science: that it must find natural explanations for natural phenomena. *But how natural is natural?*

Let me suggest, in the last part of this lecture, an understanding of God's interaction with creation which helps us resolve this impasse, and which will perhaps be a challenge to theist and atheist alike. As I suggested at the beginning--and in the title--I think the clues to such a resolution lie in truths about the relationship of Creator and Creation which can only be understood from the standpoint of the Christian doctrine of the Trinity.

Let me sum up the truths of that doctrine briefly under the terms "Closeness", "Community" and "Kenosis".

First, the *closeness* of the Creator.

a key feature of modernity has been the *distancing* of God from Creation, a distancing which has resulted in the effective irrelevance of God to our experience of the physical universe. This distancing is ironic, It came from the originally devout eagerness to "think God's thoughts after him" by reading the book of creation, in which the tradition of science is mainly rooted. But within a century of Kepler's reverent coining of that phrase, deism had effectively declared that the book of creation (read and interpreted by the light of human reason) was the only book we need pay attention to. The image of God which predominated (and to some degree still haunts Western thought about God) is that of the designer who cleverly crafted creation to operate by "natural law" and is now distant, absent, silent or (in Nietzsche's phrase) "dead". The tragedy of modernity is that science became so adept at discovering and applying God's laws (read by the "God-like" human mind) that the creator/lawgiver" dwindled to insignificance. Creation (and even ourselves) became an elaborate machine; the transcendent God was displaced by the transcendent mind, and God effectively disappeared as an aspect of our experience of creation. Even Christian believers, when we want to speak of God's action, we do so in language of "super-natural"--as though the universe ordinarily gets along fine without God, who acts, in miracles, only when he wants to get our attention, and such action is spoken of as "intervention". But language of God's "intervening" is not really consistent with the Biblical understanding of creation in which all that happens is recognized as God's work.

In the words of a contemporary Orthodox thinker, Kallistos Ware:

As the fruit of God's free will and free love, the world is not necessary and not self-sufficient, but *contingent* and *dependant*. As created things we can never be just ourselves alone. God is the core of our being, or we cease to exist. At every moments we

depend for our existence upon the loving will of God. Existence is always a *gift* from God.<sup>1</sup>

And again:

As creator, then, God is always at the heart of each thing, maintaining it in being. On the level of scientific inquiry, we discern certain processes or sequences of cause and effect. On the level of spiritual vision, which does not contradict science but looks beyond it, we discern everywhere the creative energies of God, upholding all that is, forming the inmost essence of all things. But, while present everywhere in the world, God is not to be identified with the world. . . . God is *in* all things yet also *beyond and above* all things.<sup>2</sup>

If God is necessary to each thing's existence, language that speaks of God's intervening in a normally "natural" process seriously misrepresents the nature of the Creator—creation relationship. That "seamless web" of explanation, whether descriptive of the origins of the cosmos, of life, or of humanity, is thus not necessarily a threat to our understanding of God's creative activity. a late-nineteenth century Christian defender of Darwin, Aubrey Moore, put the point succinctly when he observed that "a theory of occasional intervention implies as its correlative a theory of ordinary absence."<sup>3</sup>

But God is not "ordinarily absent": his presence is, in a sense, the "other side" of that strangeness and coincidence, that "fine-tuning" of the cosmos, whether or not we are able to catch that "natural event" in the web of our explanations. When Lee Smolin titles the chapter in which he talks about the fantastic odds that the physical constants would allow for the existence of stars, he speaks of "the miracle of stars." He intends no theological statement, using miracle only as a figure of speech. But he spoke more wisely than he knew. As John Donne put it in an Easter sermon, four centuries earlier as the disturbing pervasiveness of scientific explanation was just beginning to be felt:

There is nothing that God hath established in a constant course of nature, and which therefore is done every day, but would seem a Miracle, and exercise our imagination, if it were done but once; Nay, the ordinary things in Nature, would be greater miracles, than the extraordinary, which we admire most, if they were done but once. . . though he glorifie himself sometimes, in doing a miracle, yet there is in every miracle, a silent chiding of the world, and a tacit reprehension of them, who require, or need miracles.

The Biblical picture, in both Old and New Testaments, is of a God who is continually active in creation, even through what we would call "natural" actions, but which Donne more wisely calls miraculous: part of the expanding "singularity" of the cosmos. Thus (for example) in Psalm 104 the Psalmist describes the workings of a forest ecosystem, which he (and we) could explain quite

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Kallistos Ware, *The Orthodox Way* (St. Vladimir's, 1979), 57.

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Kallistos Ware, *The Orthodox Way*, 58.

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Aubrey L. Moore, *Science and Faith* (London: Keagan and Paul, Trench, 1889), 184.

well in “natural terms”: God sends the rain on the mountains; he waters the trees; he gives food and drink for man and beast. Of all creatures he says, “you send forth your spirit, and they are created”, making plain that the utter dependence of creature on Creator which is so evident in Genesis 1 is in fact an ongoing and continuous dependence. New Testament writers are even more succinct in their stupendous linkings of Christ and creation. John clearly is alluding to Genesis 1 and the creation of all things when he says of Christ (who became flesh and dwelt among us) that he was that Word who was at the beginning, without which no thing was made; Paul echoes the point when he speaks of “all things holding together” in Christ.

Thus Scripture links both God’s Spirit, and God’s word, Christ, with Creation: The spirit which animates, the Word which is God in the flesh, and which somehow is the central principle of each thing. Thus Irenaeus is led early in the second century to speak of God creating with the “two hands” of word and Spirit, perhaps the first clear linking of the Trinity to Creation. What is clear is that all the processes which we normally call “natural” are also God’s work. Thus Paul speaks to the enthusiastic Pagans at Lystra, reminding them that they already know something of the God he is to declare to them, for he it is who “who has shown kindness by giving you rain from heaven and crops in their seasons; he provides you with plenty of food and fills your hearts with joy.” And he it is, we would add, who works also in the formation of the universe, of the physical constants, of stars and planets, and who fills our hearts with awe the more we understand of that formation. For the God who is utterly other than Creation is yet very close to it, a closeness Christians affirm when they speak of God’s word and God’s Spirit in Creation. We don’t have time here to discuss the way this understanding of God’s upholding of creation was replaced by a quite un-biblical; concept of “natural laws”--a sort of rational order by which creation ordinarily operates. The Biblical view is that although Creation is orderly--it is God’s order, what has been described as “God’s customary way of acting” not the order of law imposed on creation.

### **God as Community**

Another way in which the Western Christian tradition has departed from its own best insights, and thus overlooked or denied aspects of creation, has been its effective Unitarianism. Beginning with Augustine, it has been conventional to speak of God’s *oneness* before his threeness. The trinity becomes a problem to be solved, rather than a relationship to be delighted in. The Christian claim, based on the experience of God in Jesus, and in the ongoing witness of the Spirit, is that God is a community of persons in relationship. Another Eastern Orthodox thinker, John Zizioulas, writes of *Being* as communion. He speaks primarily of what we can know of the triune Being of God--but suggests that the creation which the triune God maintains in being is likewise a communion of free individuals (be they persons or photons)

Instead of the misleading image of a machine working according to mechanical laws, we find increasingly that the universe is characterized by a far greater freedom, a far greater *respect*, if we can use that human term, for unique entities in networks of relationship. The British biologist Arthur Peacocke--whom we quoted earlier in description of the “seamless web” of scientific explanation, describes the changes which have resulted in our view of the cosmos--and of the nature of science itself--in the past century:

*Then, nature was regarded as simple in structure, basically substantive, and reducible to a pattern of combination of relatively few entities: now we know it is enormously complex, of multitudinous variety, basically relational, consisting of a hierarchy of levels of organization. . . .*

:That the universe is “basically relational” is one of the great insights which has come from our understanding that it has a story, and that we must understand human life within that unfolding story. Increasingly, we are able to feel at home in a cosmos which is less of a machine and more of a *household*. As Physicist--and Gifford lecturer-- Freeman Dyson has observed, against the vast backdrop of time and space which constitutes current cosmological understanding: “I do not feel like an alien in this universe.” We are at home here. We were meant to be. And the metaphor of a household follows from our thinking of God as community. As the Catholic theologian Catherine Lacuna puts it:

*Household is an appropriate metaphor to describe the communion of persons where God and creature meet and unite and now exist together as one. The reign of God is the rule of love and communion. . . The salvation of the earth and of human beings is the restoration of the praise of the true living God, and the restoration of communion among persons and all creatures living together in a common household. The articulation of this vision is the triumph of the doctrine of the Trinity.*

--Catherine Lacuna

The metaphor of a “household” offers several advantages over thinking of the universe as a machine, or an organism, or, for that matter, as a God or goddess., Perhaps the most obvious being that the word “household” translates the Greek “oikos”, and thus is the basis for the two words “ecology” and “economy” Thinking of creation as household thus enables us to avoid the mistakes of mechanistic, atomic individualism, on the one hand, or the mistakes of a leveling of all things into featureless equality, even if “divine”, on the other. Freedom, uniqueness, diversity in the cosmos is genuine and universal, and leads to the inexhaustible variety that surrounds us at every level. On the highest level that freedom and uniqueness meet us as other persons.

Indeed, personality, and the possibility of free conscious personal relationship seems in some ways to be implied in the very way the universe has developed. Part of the strangeness of that staggering accumulation of cosmic coincidences which has come to be called “anthropic” is that any one of those numerous conditions on which the possibility of life depends (such as the rate of cosmic expansion, or the force holding the atom together) could have been quite different than it is. At the level of the very small, events are unpredictable. At the individual level, sub-atomic particles are in some senses “free”; the regularity we call law is a kind of statistical illusion. The branch of mathematical physics called “chaos” or “complexity” studies suggests that the weather, with its deep unpredictability, provides a far better model for understanding “nature” than the apparent regularity of the planets.

“Chaos” seem an apt description of such a world--the world of fringed edges, fluted shorelines, and shifting clouds which we daily inhabit. Yet (as we know) such world is extraordinarily beautiful. And even its chaos is, in a sense, illusory. As computers have enabled us to see, the

very randomness of “chaotic” forms, though unpredictable, is patterned and beautiful. The whole study suggests a world where “newness” “spontaneity” and “creativity” are possibilities at the every level. Surprise seems built in to the universe. Ilya Prigogine, the physicist most noted for the description of such systems, said, “ We are in front of a universe that is astonishing us.” (179) Angela Tilby, reflects on what such a creation reveals of its Creator:

What kind of a God fits into a universe in which chaotic unpredictability plays a part? Not the timeless impersonal God of Aristotle; or the God who is the secret intelligence of nature, as for Spinoza and Einstein. The God of this kind of universe is one who accompanies creation through its process, a creative, dynamic God, closer to the God of the Scriptures than the kind of God whose mind is investigated by Stephen Hawking. . . .(180)

The cosmos then is a collection of individual things in ordered but free relationships. We are increasingly able to see even a kind of genetic relationship, a kind of inheritance which links the cosmos together, without blurring distinctions. Through the elements in our make-up we are indeed made of the dust of stars, scattered in the violence of their death. But we are not the stars. We know through many sources--perhaps most dramatically through our shared DNA--that we are related to other plants and animals. But our uniqueness--both as a species, and individually--is genuine.

It is only in the relationships among human persons that the full richness of diversity that we meet in a household (or a family) can be found. But the cosmos seems to have been constructed in such a way as to produce such persons. To quote Dyson again: “It is almost as if someone knew we were coming.” Such a universe is profoundly consistent with the Creator whom, Christians say, is a community of persons, and who creates out of love. And it is with a reflection on the implications for science of the great truth--and the great cliché--that God is love--that I conclude.

## **God as Love**

In her recent book on the architecture of the Church called *The Geometry of Love*, Canadian culture- historian Margaret Visser writes this remarkable paragraph:

God is perceived on one hand as infinite, immense, the creator and sustainer of a universe, the universe whose unimaginable size we are only now beginning to discover, and on the other hand he is believed to be present in every single detail of his creation, to know and hold dear every atom, every speck of dust on every star and planet, to care about every blade of grass, every insect, every human being. . . . God’s spanning of one and many, huge and minuscule, this instant and always, here and everywhere, omnipotent and vulnerable is even further beyond human imagining. . . . The profoundly Judeo-Christian idea that God is not a theorem or a pattern or a necessity but a person--an I--takes us even further from common sense. But that is not all: Christians believe that this person (“I am who I am”) is the root of love and

eternally loves us. It takes only two words to say the most mind-boggling article of Christian belief there is: God cares.

To say that God cares--or, more traditionally, that God is love, and that the cosmos itself is the work of love, is of course nothing new. But that conviction has consisted in considerable tension both with our growing understanding of the evolution of the cosmos (including life itself), and of the behaviour of many who claim to follow the God of love, but do so in a way which shows love neither to other persons nor to the rest of creation. The combination of what seems to be a cruel creation, and of cruel believers, is what has led many into the position of Ivan in the Brothers Karamozov, who says he will have no part of such a God, or such a world. Such "protest atheism" is understandable, if the Creator is indeed the aloof and transcendent craftsmen who creates--and leaves to suffer a universe which can only develop through pain and death. The mistakes about the creator we have outlined above--that God is distant, and that God is uninvolved make it hard to take seriously that God is love. But if in fact God is close; if in fact God is relationship, and creates a universe which depends upon relationship, we can begin to see what it means to say that God is love.

The belief that the Creator is love goes against some of the things which Christians have often said about God, perhaps too much influenced by Greek ideas imported from Plato and Aristotle. One is that God is all-powerful and all knowing; another is that he is (in an old fashioned word) "impassible"--that is beyond change, and thus beyond anything like feeling. But these ideas, at least as they have commonly been understood, are not consistent with love. As W.H. Vanstone has said in a remarkable book called *Love's Endeavour, Love's Expense*:

The activity of God in creation must be limitless creativity. It must set no interior limit to its own self-giving. It must ever seek to enlarge that capacity to receive of that "other" to which it gives. The infinity of the universe must be understood, with awe, as the expression of the consequence of the divine self-giving. . . Nothing must be withheld from the self-giving which is creation. . .the universe is the totality of being for which God gives himself in love.

Quotations from Vanstone's book form the epigraphs to all of the chapters of a recent book funded by the Templeton foundation, and edited by Cambridge physicist and Anglican priest John Polkinghorne. It called *The Work of Love*, and subtitled *Creation as Kenosis*. *Kenosis* is a Greek word which means "emptying"; the book includes a number of essays by scientists and theologians which explore the idea that self-giving love is in fact the underlying principle of creation, as it is of the universe. George Ellis and Nancy Murphy published a similar study a few years ago called *The Moral Nature of the Universe*. It joins a growing body of material which suggests that we have not taken nearly seriously enough what it means to say that it is in the suffering of God on the cross that we see the love of God. We have limited our understanding of the meaning of the cross to theories of the Atonement which overlook the fact which the New Testament writers were insistent: this one who suffered was also the Creator. The one in whom "all things hold together" is also the one who ("being in very nature God, did not consider equality with God something to be grasped, but made himself nothing. . . .").

Before the beginning of Creation (unimaginable as such a time must be, and inappropriate as it is even to use words like “before” and “time” in speaking of it), there was only God; after that beginning, there was God and the universe, separate from God, yet sustained by him in the unfolding of its long story in the glory of galaxies, stars, planets and persons. If creation is truly free, then there is a sense in which the almighty God nevertheless wills to be subject to his creatures. As Paul Fides writes, in the book I just referred to, *The Work of Love*:

This divine capacity for suffering to ‘happen’ to God has its beginning in the very nature of creation. In making a free world that can lapse from divine purpose, God is exposed to the risk of something God did not directly create.. . That is God is vulnerable to the emerging of something strange from the side of created beings.

Christians are not agreed on whether it is possible to use words like “risk” “suffer” and “vulnerability” of God, yet it is hard to see how we can speak of God’s love without using such language. C.S. Lewis put the paradox powerfully in a stanza of a poem:

*Love's as hard as nails,  
Love is nails:  
Blunt, thick, hammered through  
The medial nerves of One  
Who, having made us, knew  
The thing He had done,  
Seeing (with all that is)  
Our cross, and His.*

Perhaps in fact we cannot think of creation without thinking also of the cross, which is the ultimate answer to atheism, for it shows us the fact that in extremity God also suffered what the atheist suffers: “My God, why have you forsaken me.” Yet because of that we human creatures--and all of creation--have hope. As Vanstone puts it,

. . . faith in [Love’s] triumph is neither more nor less than faith in the Creator Himself--faith that He will not cease from His handiwork nor abandon the project of His love. The creation is ‘safe’ not because it moves by programme towards a predetermined goal but because the same loving creativity is ever exercised upon it.

We began this reflection by a consideration of the strange nature of creation, and we have ended it with a consideration of the even stranger nature of the cross.

Perhaps the best way to sum up the idea being explored here is to live you with a potent image from the Celtic Christian tradition, the Celtic cross--a circle, which is an apt symbol for much of what we know about the universe: its connectedness, its comprehensiveness--and its ultimate meaninglessness, considered strictly in itself. But intersecting the circle, giving it a centre and a context, is the picture of the cross: which not only depicts a first-century form of Roman torture--but the fact that it was God the Creator of the circle who was all along at the heart of it, pouring himself out for the whole creation.

I began this talk by suggesting these were difficult days to be an atheist or a theist, but I conclude by saying: when we understand that the bigness of the universe which science studies is matched only by the greatness of the God who gives himself for that universe, then the atheists objections disappear. I believe in the God who created the universe, who from the beginning has poured himself out for it, who shows us his character in the self-giving love of Christ, and who invites us--as curious, wondering--and wandering--persons back into relationship with the one who, in very nature, is relationship and love: the love, as Dante closed his great medieval attempt to make sense of the cosmos, which he called rightly a Comedy: The love that moves the stars.