

YOUR GOD IS STILL TOO SMALL

Chapter 2

Leptons, Quarks, and the Personal God

*If you think you understand God,
then you don't understand God!*

We live in an exciting time. Science has opened up for us the grandeur of God in ways never before imagined. Last chapter, we quoted Sir John Polkinghorne, the Cambridge Don and theoretical physicist turned clergyman. As a member of Britain's most prestigious group of scientists (the Royal Society), Polkinghorne has unique qualifications to say:

There's a feeling throughout our society that religious belief is outmoded, or downright impossible, in a scientific age. I don't agree. In fact, I'd go so far as to say that if people in this so called "scientific age" knew a bit more about science than many of them actually do, they'd find it easier to share my view.¹

Science readily explodes the myth of a limited god, but if we believe that science shows Christianity to be a simplistic or outmoded worldview, then our perception and understanding of God is too small!

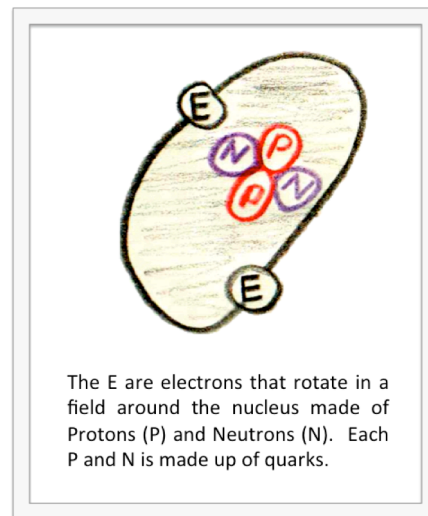
Perhaps you read about the new supercomputer Sequoia? On June 18, 2012, IBM's Sequoia was announced to be the world's fastest supercomputer. The computer "is capable of calculating in one hour what otherwise would take 6.7 billion people using hand calculators 320 years to complete if they worked non-stop."² Now that is truly amazing! Give every human being on the planet a calculator, teach them how to use it, and it would take constant usage for 320 years to accomplish the computations that Sequoia does in one hour!

What could ever need that type of computing power? This computer is used to carry out calculations on the ways atoms combine and decay within the confines of nuclear weapons. The workings of atoms involve massive amounts of mathematical calculations. The numbers and sizes involved make for a mind-

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boggling set of numbers. Each time we breath, we take in a million, billion, billion atoms of oxygen – a number so large we need to consider something smaller than a human breath for our discussion. Instead of a breath, consider the period at the end of the last sentence. That dot contains 100,000,000,000 (one hundred billion) atoms of carbon. The carbon atoms are so small, that if you wanted to see one with the naked eye, you would need to stretch the dot out to the size of a football field.

Scientists have figured out that as small as it is, an atom is still not the smallest particle of nature. It is not even a fundamental particle (by “fundamental,” we mean an indivisible material made of nothing smaller). An atom contains a nucleus at its core, which is surrounded by one or more electrons. To the current state of knowledge, the electron is a fundamental particle called a “lepton.” Scientists do not know if an electron breaks down into smaller parts. Not so the nucleus. If we wanted to see the nucleus of an atom, we could not see it by simply extending the dot to the size of a football field. We would need to extend the dot from the North Pole through the earth to the South Pole (about 7,900 miles). We could then see that the nucleus is made of proton(s) and neutron(s). Even these protons and neutrons, however, are not fundamental parts. They are made up of “quarks.” These quarks are tightly bound together and come in two different kinds.



How small are these quarks? If we wanted to see the quarks with our naked eye, then we would need to stretch the dot beyond a football field, and beyond the distance between the North and South Poles. To see the quarks of a single atom, then we would need to stretch the dot from here to 20 times *further* than the moon!

We should add that scientists are not even certain that the quark is a fundamental particle. Some believe quarks are made of “oscillating strings” (There are many permutations of the “string theory” as scientists try to establish strings as the absolute fundamental part of all that exists in nature). Strings are a theoretical explanation of various models attempting to explain the forces and charges in subatomic particles. Current technology cannot measure or discern structures smaller than 10^{-18} meter, so no experiment demonstrates the reality of strings.

Now consider the implications of this, especially in light of our last chapter. A sphere of swarming quarks, so small that you need to stretch the atoms in a period twenty times past the moon to see them, make up the protons and neutrons of an

atom's nucleus. A period has 100,000,000,000 atoms, if it is paper-thin. Reportedly, each cell in the human body contains about 100 times as many atoms as there are stars in the Milky Way, which would be about 200,000,000,000,000 atoms in a cell. The human body has 100 trillion cells, so each human is made up of 200,000,000,000,000,000,000,000 atoms. That means each human has more atoms on average than scientists estimate there are stars in the universe. Continue to compute that there are about 7 billion people on the planet, and we are considering 1,400,000,000,000,000,000,000,000,000,000,000 atoms just in people. Add dogs, cats, rocks, oceans, air, and everything else, and earth alone has an inconceivable number of atoms. Earth, of course is one-millionth the size of the sun, which is one of 10^{23} of the stars in the universe. There is no way we can even begin to conceive the number of particles that exist (We should add that the particles in an atom are not even remotely close to all the kinds of particles that exist).

With all due respect to the Sequoia computer, it is not even worth mentioning in the same book as what would be necessary to understand all the particles in the universe today. Of course, when we speak of God, we are not considering one who knows only the particles in the universe today. God grasps all the particles in the universe for all time.

THE PROBLEM:

In light of what science has taught us about the nature of the universe, ***how could man ever understand a God like this?*** How can we fathom that there is a being so fantastic, that he made and understands each particle that has ever or will ever exist? Such a being is too fantastic to understand, and too amazing to describe. We have no words to explain such a being, because we cannot fathom such a one. It is truly beyond anything we can grasp. We simply do not have the words.

POSSIBLE SOLUTIONS:

Dismiss God because he doesn't fit in our brains. We might be tempted to run from the idea, and just deny that there could ever be a God who could know such things. That approach, however, would surely be most arrogant. We accept the Sequoia supercomputer, albeit with amazement, but we do accept it and benefit from it daily. Most assuredly, 100 years ago, even the best scientists in the world would not have thought such a computer possible. What might be possible in another million years of the best scientific advancement? We surely have no idea. To dismiss God as possible simply because our human brains could not grasp something so large is foolhardy at best.

Reduce God to something that fits into our brains. Instead of dismissing God as an impossibility, we might be tempted to reduce God down to something more manageable. Maybe God is far beyond human potential, but still within human definition! In other words, we might accept that God is much greater than we are, but not on the level he would need to be to know each particle in space and time, charting each atom, and exercising control over the universe. We might be tempted to make God smaller, just so he fits into our box of comprehension. That would be a tragic mistake. To strip God of his omnipotence, omniscience, and omnipresence is to strip him of real God-ness.

Make God into a super-supercomputer. A third possibility might be to make God a Sequoia-type computer of the n th degree. God is a massive otherworldly computer that charts each atom and does the math to figure out how the universe will act and unfold. God becomes a cold machine.

Of course, all these options have a common thread. They all make God too small. They suffer from the same error. They try to understand and see God “from the ground up.” They are man’s efforts to understand God in man’s terms, rather than understanding God as he revealed himself. God never revealed himself as a supercomputer. God never revealed himself as the record keeper of each electron’s rotation or the billions of penetrating neutrinos (another incredible particle we have not discussed). In fact, God’s injunction to the Israelites on Sinai was that they should not make any image of God. God is not easily captured by man’s thinking or imagination!

Look to how God revealed himself. We know of God in detail because of revelation, not simply man’s computations. This makes sense, especially in light of what science teaches us about the structure of things. There really is no way that humanity can begin to grasp the form of God, the super-nature of God (by which we mean the aspect of God that is not part of the material universe), the mind of God, or most anything else of substance, without God choosing to reveal himself. Fortunately and importantly, God has revealed himself to humanity in ways that humans can understand. God has revealed himself through relationships and stories.

That is not to say that humans have not been able to ask questions about God and reality, at least from how the world is perceived by human senses and thinking. One of my favorite ancient Greek philosophers was the enigmatic Heraclitus. Heraclitus lived in Ephesus (modern Turkey) about five hundred years before Christ, and his writings influenced thinkers well past the death of Jesus (including many in the early church). Centuries after his death, he was still regarded as “uncommonly arrogant and contemptuous,”³ even though he was treasured by the

Athenians, read by Socrates and others, and a copy of his writings was kept in the esteemed Temple of Artemis at Ephesus for others to read in the centuries to come.

He had an ability to see the harmony in opposites, looking for a unity among diverse things. When writing *On the Universe*, he noted,

Good and bad are the same.⁴

Lest we think him crazy, he had rational reasons for his paradoxical thinking. A splendid example is expressed in his phrasing about the ocean:

Sea-water is both very pure and very foul; to fishes it is drinkable and healthful, to men it is undrinkable and deadly.⁵

Heraclitus was held in great esteem, in part because he was difficult to understand! His sayings were rarely explained, and left much to the reader to think through. Consider his harmonizing immortality and mortality as he spoke on life and death:

Immortal mortals, mortal immortals, one living the others' death and dying the others' life.⁶

This translation makes the passage a bit more difficult to understand as the translator opted for trying to reflect the beautiful symmetry of the Greek, rather than make it more comprehensible for the 21st century Western reader. In more colloquial language, Heraclitus was saying, “Immortals *are* mortal because they are living their deaths, while mortals are immortal because they are dying their life.” Still not clear? Perhaps this helps us understand why so many in his day found him difficult to grasp.

Although scholars debate exactly how to put together what remains of Heraclitus's writings into a coherent whole, there seems to be a scholarly consensus on how his writings on the universe start:

It is wise to listen, not to me but to the Word, and to confess that all things are one. This Word, which is ever true, men prove as incapable of understanding when they hear it for the first time as before they have heard it at all. For although things happen in accordance with this Word, men seem as though they had no experience thereof...⁷

Heraclitus seized upon the Greek *logos* (λογος), which means “word” or “reason” as what brought meaning to the universe. This Word was the ultimate reality, and in that way, he saw it as the uniting element that makes everything one. It

becomes the “fundamental element” that is common and shared by all things, giving a unity even to opposites.

Many philosophers after Heraclitus would seize his language and write of the Word as a divine force and a key to understanding the universe. Plato wrote of the “Word,” and according to Aristotle was taught by a follower of Heraclitus (a Heraclitean named Cratylus).⁸ The Stoic school of philosophy considered Heraclitus as the source of their philosophy, and they wrote extensively on the Word. For the Stoics, the Word was an impersonal force that we might better translate as “logic” or “reason.” It was the supreme force that found expression in the Universe’s rationality.

Perhaps the most famous of the later writers to use the “Word” was another who wrote from Heraclitus’s home of Ephesus. We know his writing as the Gospel of John. The gospel, which the early church fathers affirmed as written by the apostle John late in his life while living in Ephesus, begins by interweaving the creation language from Genesis 1 with ideas of the Word that could be read handily as an extension of Heraclitus’s thought.

The Gospel begins:

In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things were made through him, and without him was not any thing made that was made. In him was life, and the life was the light of men. The light shines in the darkness, and the darkness has not overcome it (Jn. 1:1-5).

John, like Heraclitus, writes of the Word as a principle or force that, whether men accept or understand it, drives the universe. Just as in Heraclitus, all “things happen” through this force or Word, so in John’s language, “all things were made through him, and without him was not any thing made that was made.”

John’s writing in the Greek gives nuanced meaning that we often miss reading this passage in English. For example, the passage in Greek starts, “*εν αρχη*” (*en arche*), which means “in beginning.” John does not add the Greek article “the” that our normal English needs to keep from sounding awkward (This grammatical construction in Greek is called “anarthrous,” meaning “without an article”). John’s way of writing affirms the Word present at *every* beginning, not simply “the” beginning. At the origin of everything is the Word. This thought continues in the next two phrases. The Word was “with” or “toward” God, and in climax, the Word “was” God. The Greek is written with great clarity and directness. The Word was not part of God, or an expression of God. The Word was not simply “divine,” nor was it “another” god. The Word *was* God.

While much of John can be read sensibly in the vein of Heraclitus and other Greek thinkers, in verse 14 of chapter 1, John adds a game changer to any Greek thought about the Word. John makes a most profound distinction from the ambiguous and unknown Word of Heraclitus and gives it a visible and knowable form. John proclaims the Word as *personal*:

And the Word became flesh and dwelt among us, and we have seen his glory, glory as of the only Son from the Father, full of grace and truth (Jn 1:14).

Faced with the eternal question of the universe, John explains that Divinity was not simply an idea, a reason, or some impersonal force. The Word as Divinity became Humanity. The Word became flesh. The God of the universe, present in every beginning, the pre-existing Logic and Reasoning was *personal* and communicated to humanity by becoming a person.

John 1 and Hebrew Thought: “Word”

John does an amazing job in his gospel at writing things with multiple meanings. If it happened only once or twice, then one might think it the natural ambiguity that occurs in writing. However, in John we see it repeatedly in ways that clearly reflect the author’s purposeful teaching. A good example is the usage of “Word” in John 1. While “Word” had great meaning in Greek thought, and certainly no Greek living in Ephesus would not know its association with Heraclitus, it also had great significance in Hebrew thought. To the Hebrews, John 1 echoes the creation in Genesis 1, which also starts with the phrase “In the beginning.” In Genesis, God *spoke* creation into existence, so Word takes center stage (See also Psalm 33:6). Also in Hebrew Scripture, “Word” is frequently set next to YHWH (*debar YHWH*) as the Word of the Lord expresses his creative activity, his revelation through the pen and voice of prophets, and his redemption both then and to come. The impact to a Hebrew reader of John’s message brings a whole new level of meaning to the prophetic words of Isaiah where YHWH says, “so shall my *word* be that goes out from my mouth; it shall not return to me empty, but it shall accomplish that which I purpose, and shall succeed in the thing for which I sent it.” (Isa. 55:11). In the centuries before John wrote, rabbis frequently explained Hebrew Scriptures in everyday language (These became known as “Targums.”) In these discussions, “Word” was used hundreds of times as a substitute for the Holy Name of God (YHWH), which was not to be pronounced!

Throughout the pages of John's gospel, we read of what happened when the ultimate reality took human form, and it is what we might expect, and yet at times, it is quite surprising. As we might expect, and indeed as is logical, Jesus as God had control over the elements of nature and was not subject to the laws of physics. Equally expected, Jesus did not simply live a magical life spoofing the laws of nature; he altered those laws only when a compelling reason existed. Otherwise, he lived as a human, subject to those laws as he created them. He experienced pain, anguish, hunger, and other human experiences. Surprisingly, he subjected himself to other humans who had control in society. Jesus was never bent on establishing himself as the top of humanity's pyramid, heading a world empire or even a religious cult. Jesus was content to teach and reveal God in words and deeds, finally sacrificing himself for an ultimate purpose of God in relation to man.

Jesus and Miracles

Some think it impossible for God to alter the laws of nature, even when a compelling reason might exist. It seems to some a deception if the world does not always follow the laws of physics even where God is concerned. Yet, the logic in this claim is only there if God is too small.

God did not make a magical world where the laws of physics have no reliability. Those laws reflect God's consistency and reliability, but God as God is not himself subject to the laws of physics. God has the freedom and discretion to use the laws of physics and to alter those laws where it serves his greater purpose. Scripture teaches that those times are very rare, but we reduce God too much to suppose that he has no such power. God reigning over nature does not make the world deceptive. It makes the world reliable while also pointing to one who is even greater than the laws of nature.

In Jesus, we see God's Word and communication to man, revealing God in ways that science could not. Science cannot deliver God's morality; yet in Jesus, we see God's compassion and sense of justice. Jesus rails out at the unfairness of man, at the mistreatment of the lower segments of society, and at the arrogance of those deluded by what appeared to be their success or intelligence. (It is funny to note how "smart" some thought they were, especially as we see the world today, and know how shallow their knowledge was. Of course, the trap for us is our tendency to think we now *know* so much. People can be silly in our pomposity, can't we?)

Jesus showed God to be interested in people and relationships. He revealed God in relationship terms. He taught God as "Father," even as he came as a "Son." Later in John, Jesus promised God would send his Spirit as a "helper called alongside" to assist in life (the Greek word John used was *paraklete*). He also

bore witness to Jesus as a Rescuer or Savior, redeeming people from the ravages of sin, both on earth and in eternity.

Another *personal* aspect of God revealed in Jesus is added in John 1:14. After proclaiming that the Word became flesh, John adds that the Word made flesh “dwelt among us.” Here, we have another relationship word. God chose to live and exist among the people on earth. He was a neighbor! Yet digging into John’s vocabulary shows the special kind of neighbor Jesus was. John says that the Word “dwelt” using the Greek σκηνοω (*skenoo*), which mean “pitched a tent” or “lived in a tent” among us. There is something transitory about living in a tent. It was not a permanent residence or abode, it was something that was for a time. The Word did not become a human to stay a human. The Word was not flesh forever. John emphasizes this point by using a verb tense in Greek called the “aorist.” It is a verb tense that stresses the historical placement of some occurrence. John is saying that at a particular time and place in the past, the Word became flesh, in effect, pitching its tent and dwelling among us.

John 1 and Hebrew thought: “Dwelt”

Just as we saw with “Word,” John’s choice of “dwelt” also has special importance in Hebrew thought. In Hebrew language, we could turn the noun “tabernacle” or “tent” into the verb John used here and translate him fairly as, “And the Word became flesh and tabernacled among us.” This way of seeing the passage harkened the Jewish mind back to the Exodus from Egypt where God had Moses oversee construction of a tent or tabernacle that would symbolize God’s presence among his people. Exodus 40:34-35 relates:

Then the cloud covered the tent of meeting, and the glory of the Lord filled the tabernacle. And Moses was not able to enter the tent of meeting because the cloud settled on it, and the glory of the Lord filled the tabernacle.

John echoes the same events in his writing as he affirmed that the Word made flesh that tabernacled among humanity allowed many to “see his glory” as exhibited in relationship: “And the Word became flesh and dwelt among us, and we have seen his glory, glory as of the only Son from the Father, full of grace and truth.”

CONCLUSION

An amazing aspect of science digging into the natural order to best understand the composite parts of matter is the way it shows the grandeur of God. Once we become cognizant of the seemingly infinitesimally small leptons, quarks, and other

sub-atomic particles, and once we consider how inconceivable the numbers are in the universe, then we are tempted to reduce or eliminate God altogether. We wonder how there can be a God who truly knows and discerns such vast amounts of data. If there is such a God, then what could we, as humans, ever know about him? How could we, as small collections of swarming schools of quarks and electrons, ever relate to such a God? Heraclitus is quoted as saying, “The most beautiful of apes is ugly in comparison with the race of man; the wisest of men seems an ape in comparison to a god.”⁹

The Biblical answer is one that makes sense logically. We can only relate through God revealing himself in ways and words that we can understand. But we can relate to God because he has chosen to reveal himself in a way we can understand.

Word is a “revelation” term. It is what proceeds forth from one’s mind finding expression through pen or mouth. We use words to convey and communicate thoughts and reasoning. God used words as ways of communicating and revealing himself to humanity. As the Word demonstrated, God is not some supercomputer or some impersonal deity removed from the world. God the Majestic, God the All Knowing, God the Almighty chose to express himself to the collection of atoms that form humans in ways that humans can understand—his words and his Word, Jesus. His Word reveals God as a personal God, a God of relationships, of caring and devotion, of goodness and uprightness, of justice and fairness, and of power over the natural order. We fail to accept or grasp these things, not because God is deficient, but only because our *thoughts* of God are too small!

¹ Polkinghorne, John, *Quarks, Chaos & Christianity*, (Crossroads 2005), at 10.

² <http://www.bbc.co.uk/news/technology-18457716>.

³ Diogenes Laertius, *Lives of the Philosophers*, at IX.

⁴ Heraclitus, *On the Universe*, at LVII (Loeb Edition, translated by W.H. S. Jones).

⁵ *Ibid.*, at LII.

⁶ *Ibid.*, at LXVII.

⁷ *Ibid.*, at I-II.

⁸ Aristotle, *Metaphysics*, at 987a32.

⁹ Pseudo-Plato, *Hippias Major*, translated by Kahn, Charles H., *The Art and Thought of Heraclitus*, (Cambridge 1981) at 55.

POSTSCRIPT
(Points for Home)

1. *“In the beginning was the Word”* (Jn 1:1).

We find God in everything at every point in time. There is nothing in your existence outside of God’s presence and awareness.

2. *“And the Word became flesh and dwelt among us”* (Jn. 1:14).

God is not only aware of everything, but he also wants to relate to us in the midst of everything. There is nothing in our lives, where God wants to be excluded.

3. *“And we beheld his glory, glory as of the only Son from the Father”* (Jn. 1:14).

We see God in Jesus. God entered our space and time, became a human, and lived in this world, all out of love for us. Heaven forbid we ignore that and fail to respond in worship and devoted love!