Free-will versus Determinism and the Absence of Nothing

by Andy Thomas (September 2021)

As Solzhenitsyn meticulously recounts in his seminal work, *The Gulag Archipelago*, utopias constructed according to rational theories lead only to madness in which countless millions die. The experiment has been tried multiple times, but has yet to yield different results.

It has been widely argued, on the other hand, that capitalism has lifted billions out of poverty. This is perhaps so. But it would seem also that capitalism alone, devoid of any moral or social foundation, eventually becomes unhinged as big business, market manipulators and money printers spin off into a reality of their own.

Without anything to believe in, what is there to keep people honest?

We owe much to science including, it would seem, the idea for many that: behind everything there is *probably nothing*. This was brought home to me a few years back, when in intense philosophical discussion, a friend exclaimed in anguish, "Yes but science says that we are nothing more than a pile of iron and calcium and potassium salt!"

My smart reply was, "Science doesn't say anything. Science is a method."

Nevertheless I certainly understood where he was coming from. Indeed, I share his sentiments—*when things are reduced to their axiomatic parts, something of value is lost.*

The "science" to which my friend was actually referring is a *materialistic* world view left to us by 18th and 19th century

science. Having originally been a student of physics, my own perspective on things was certainly one broadly grounded in materialism, although I wasn't particularly acquainted with its philosophical heritage until a later age.

Materialism is the view that reality, as comprised material stuff (atoms), exists independently of our perception of it and, furthermore, minds (animal and human) evolved out of it, as a kind of by-product we may say.

How could things be otherwise?

This essay originates from the many discussions I had with my friend, whose world view was the very opposite of materialism, along with my own realisation of just how much my own thinking had changed over the years, such that there now lay a bridge between us.

To be sure, I do not denounce *The Enlightenment* or the science it gave rise to. It was a very necessary path we had to take. Science uprooted the scholastic dogma of the day and established a new age of honest investigation.

For Johannes Kepler and Isaac Newton, the science of their time was the study of God's nature which did not conflict with their Christian beliefs. From their own endeavours however, and those of many others, there would emerge a view of the universe in which the need for God was brought into question. For it began to appear that, at the heart of all existence, there was nothing more than clockwork—a purely mechanical universe in which everything could be reduced to atoms obeying Newton's own deterministic laws.

It then must surely follow, it was reasoned, that everything in nature should be knowable to us and ultimately predictable—in principle if not in practice. This idea was epitomised at the time by French mathematician, Laplace, who expressed it thus:

We may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at any given moment knew all of the forces that animate nature and the mutual positions of the beings that compose it, if this intellect were vast enough to submit the data to analysis, could condense into a single formula the movement of the greatest bodies of the universe and that of the lightest atom; for such an intellect nothing could be uncertain and the future just like the past would be present before its eyes. —Pierre Simon Laplace, Essai philosophique sur les probabilités, 1814

This was a philosophical thought experiment and the intellect envisioned became known as *Laplace's Demon*. To this day, the idea makes perfect sense to some, especially to those who hold that computer models reflect reality. The allure for others may be a different one—for with the ability to know the future with absolute certainty would come great power. But it would bring other things too…

If our future were cast in stone long ago, only to be unfolded by rigorous mathematical laws, what then of free-will?

On what possible mysteries could Laplace's Demon ponder? What possible dreams could it cling to? What goal or reason for being could it have – other than perhaps to consume everything within its grasp—the ultimate dismal endgame of which it would already know?

Decades later, Charles Darwin struck at the very heart of a belief that was once held inviolable in his seminal work of 1859, *The Origin of the Species*. In explaining the existence of life through the means of natural selection, combined with chance mutations (which would ultimately be deterministic), the very things in our hearts could be reduced to mere cooperative behaviours which had evolved for no other reason than survival for survival's sake. When viewed through a purifying prism of survival, concepts such as good and evil

disintegrate.

In foretelling the passing of God, Nietzsche writing in 1882, penned the following infamous words:

God is dead. God remains dead. And we have killed him. How shall we, murderers of all murderers, console ourselves? That which was the holiest and mightiest of all that the world has yet possessed has bled to death under our knives. —Friedrich Nietzsche, The Gay Science, 1882

Here, Nietzsche is not proclaiming that God does not exist, although it is widely accepted that he was an atheist. Rather, he is prophesying the consequences of that which comes with losing all frame of reference.

In the same work, he writes:

What did we do when we unchained the earth from its sun? Whither is it moving now? Whither are we moving now? Away from all suns? Are we not perpetually falling? Backward, sideward, forward, in all directions? Is there any up or down left? Are we not straying as through an infinite nothing? Do we not feel the breath of empty space? Has it not become colder? Is it not more and more night coming on all the time?

Nietzsche was raised in the Lutheran church, but his own life was beset by tragedy, suffering and isolation. While he often railed against Christianity, I rather suspect that he grieved the loss.

Although commonly associated with nihilism, Nietzsche actually fought against it. If we were going to have to accept the absence of any anchor or reason for being in a vast meaningless universe, then he attempted at least to offer an alternative—the Übermensch—a vision of humanity's grown up descendents who were to find new meaning in existence for themselves.

We can contrast Nietzsche's sentiments with those of another 19th century writer who seems to have fixated on the implications of determinism, but who related to them in a rather darker way:

… I shall howl gigantic curses on mankind: Ha! Eternity! She is an eternal grief … Ourselves being clockwork, blindly mechanical, Made to be the foul-calendars of Time and Space, Having no purpose save to happen, to be ruined, So that there shall be something to ruin … If there is a something which devours, I'll leap within it, though I bring the world to ruins- The world which bulks between me and the Abyss I will smash to pieces with my enduring curses. I'll throw my arms around its harsh reality: Embracing me, the world will dumbly pass away, And then sink down to utter nothingness, Perished, with no existence—that would be really living! —Karl Marx, Oulanem, 1839

These are the words Oulanem, the hero in Karl Marx's unfinished poetic play of the same name. Marx expressed many other similar invectives against the world which he believed only a "cold God" could create.

Meanwhile, the world of physical science was triumphant and, speaking at the University of Chicago in 1894, the American physicist, Albert Michelson, summed up the spirit of the age:

While it is never safe to affirm that the future of Physical Science has no marvels in store even more astonishing than those of the past, it seems probable that most of the grand underlying principles have been firmly established and that further advances are to be sought chiefly in the rigorous application of these principles to all the phenomena which come under our notice. —Albert Michelson, 1894

The following is a well known quotation which expresses these sentiments succinctly:

There is nothing new to be discovered in physics now; All

that remains is more and more precise measurement.

These words have been commonly attributed Lord Kelvin, although it is probable they were a paraphrasing of Michelson's speech above and were misattributed.

The science of the 19th century had, as Nietzsche so politely put things, killed God. However, when Albert Michelson had effectively proclaimed that there were no mysteries left, he had hedged his words: "While it is never safe to affirm …"

What if the consensus had been wrong?

Despite what we have been told in recent times, science is not a compendium of truth to be curated over by experts and authority. Rather, science is a method for investigating nature and, at heart, that is all it is. As such, *reality is truth* and what human beings are able to learn about it using the scientific method remains our understanding only—an abstraction of reality that is subject to our perceptions and limitations.

As Heisenberg famously wrote in 1958:

What we observe is not nature itself, but nature exposed to our method of questioning. —Werner Heisenberg

Throughout the entire history of scientific investigation, each successive understanding or theory about nature, no matter how certain, has always succumbed to a better one. In other words, it would seem that *absolute truth* is inaccessible to us and the best we can do is honesty in our approximations of it.

For the belief that there is only one truth and that oneself is in possession of it, seems to me the deepest root of all that is evil in the world. —Max Born, Physics in My Generation, 1969

Honesty is not, however, a runner's up prize in a race for

truth—it is the worthy endeavour of fallible creatures. As mathematician and historian Jacob Bronowski famously said while he stood in a pond into which had been flushed the ashes of his family at Auschwitz:

When people believe that they have absolute knowledge, with no test in reality, this is how they behave. This is what men do when they aspire to the knowledge of gods. Science is a very human form of knowledge. We are always at the brink of the known, we always feel forward for what is to be hoped. Every judgment in science stands on the edge of error, and is personal. Science is a tribute to what we can know, although we are fallible. —Jacob Bronowski, Ascent of Man, 1973

While absolute truth may forever remain beyond us, it would be a mistake to reach for the polar opposite. In concluding that all "truths" are relative and therefore all truths must be equal, we reduce everything to meaninglessness. All truths are not equal—only small subset of truths represent functional and therefore satisfactory truths, albeit imperfect and temporal ones.

By the dawn to the 20th century, the ground on which scientific truth had stood so firmly were shifting. In fact, its very foundations were about to be blown out of the water and Albert Michelson, himself, would be one of those to do it in trying to tie up a loose end concerning the theory of light. Another loose end which had been proving stubbornly problematic was the behaviour of light toward the ultraviolet end of the spectrum. This particular problem would later be known as the *Ultraviolet Catastrophe*, because it proved a catastrophe for everything which had hitherto seemed so certain.

With the discovery of the electron in 1897, came the first indications that the very atomic building blocks of matter were not quite as atomic as they had seemed. Moreover, rather than a clockwork universe of deterministic laws, there began

to emerge something far more perplexing – justifiably mysterious even – than could ever have been imagined.

In 1913, Neils Bohr suggested that electrons have a wavelength associated with them. In other words, the electron behaves both as a wave and a particle. Later, in 1924, Louis De Broglie made a rather bizarre and radical claim. In what became known as *The Hypothesis of Matter Waves,* he speculated that *all matter* has wave-like properties. The first experimental confirmation came only a few short years later and the science of *quantum mechanics* came into being.

But, if matter can behave as a wave, what exactly is it that is "waving"?

As a young student, I struggled with one myself. I pictured, for example, a particle moving up and down in a wave-like motion as it travelled through space. I recall shaking my head in frustration because it didn't make any sense to me at the time.

But, in its own way, it makes rather beautiful sense.

The "wave" is a wave of potential–a probability distribution–which encodes the probability that, if you look for a particle, you will find it in a particular location in space. But you must look for it, because the profound thing is that it seems that it does not exist until you do.

I'm choosing my words carefully here, but this is more than mere philosophical conjecture.

The double-slit experiment, which Thomas Young had used to demonstrate the wave-like nature of light back in 1801, has in modern times been applied to things *known* to be particles–electrons, atoms and even large molecules. It is possibly the most important experiment ever devised because it brings into stark relief everything we thought we ever knew about anything. Not only does this experiment confirm the

wave-particle duality matter, but recent variations of it would seem to show that it is *consciousness* which causes a quantum wave of potential to "collapse" into particles or, in other words, what we know as physical existence.

Well known physicists who have argued for consciousness include: Niels Bohr, Werner Heisenberg, John von Neumann, Rudolf Peierls and Eugene Wigner.

You see, the quantum mechanical description is in terms of knowledge, and knowledge requires somebody who knows. —Rudolf Peierls, in P. C. W. Davies and Julian Brown, The Ghost in the Atom, 1993

The wider implication if this is true would, of course, be stunning. Quantum mechanics, however, has proven itself to be a subject of the kind of controversy not seen since Galileo. The materialist and reductionist heritage of science is a difficult thing to let go.

Many argue consciousness is not relevant at all. The problem stems, some would say, from the unfortunate use of the word "observation" by the pioneers of quantum mechanics. An alternative interpretation proposes that collapse occurs when a quantum state becomes entangled with those around it. Or more simply, the question is not one of observation, but as to when *information* becomes irreversibly encoded in the macroscopic world. I find this a compelling explanation but one which ultimately does not make the problem of consciousness go away.

Just what is information without interpretation by a mind? What is knowledge without a knower?

I ask this as someone who once held that the deterministic processes of materialism were sufficient to explain all and, moreover, as someone who once accepted that behind everything—there was probably nothing. I no longer believe the former and I am no longer sure of the latter.

However we may interpret the ramifications of modern science, Nietzsche and Marx were premature in accepting the cold dead hand of determinism.

Quantum mechanics, that on which our reality rests, defies determinism. It is inherently probabilistic, not deterministic. Events at the quantum level seep into our macroscopic reality. If this were not so, how could quantum behaviour have been discovered? How can we even be having a discussion of it?

We simply do not live in a strictly deterministic universe, but one with adequate determinism. It is true that, through scientific analysis, we can achieve great power—after all it was with *adequate determinism* that we walked on the moon and it is with *adequate determinism* that we may travel to the planets. But the philosophical implications of determinism are dead. We just don't properly know it yet.

Our universe is one which grants free-will while imposing universal laws. It's a fierce little contradiction, I know. So until science manages to kill God, and it has far from done so, I find the words of Jordan Peterson pertinent:

> *I act as if God exists, and I'm terrified that he might.* —Jordan B. Peterson, Q&A, 2019

This should perhaps have profound implications for us and society.

Given that we live in a universe in which hope is indeed possible, I hope for a *New Enlightenment*—a new age of meaning and value—one that will again uproot all that has gone before it.