

The Voice in the Whirlwind: Lessons for Job – Randomness and Natural Evil

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This paper is a joint endeavor with my friend Jason Hine, a colleague with whom I have worked on a number of projects involving science, philosophy and Christian faith.

The biblical book of Job recounts a man described to be, as we read in the very first verse, “blameless – a man of complete integrity.” and one who was very rich in possession, family and health. But calamity quickly strikes Job. A fire from heaven burns up Job’s sheep, a powerful wind sweeps in from the wilderness and collapses Job’s house killing his children, and later Job suffers boils from head to foot. Job’s attitude progresses – first a calm acceptance of his losses, but later he insists that he has been treated unfairly, a conclusion he reaches after receiving unhelpful and inappropriate counsel from four friends. Job then screams at God, demands a hearing and asks for justice. And then a surprise - God responds to Job.

God, as the Voice in the whirlwind, opens his response by making one and only one criticism of Job – God says Job is ignorant and asks in Job 38:2, “Who is this that questions my wisdom with such ignorant words?” In the speeches that follow in chapters 38-41 God teaches Job aspects of creation, mainly through examples stated in terms of rhetorical questions. By doing so God points out to Job the divine strategy in planning, creating and overseeing the operation of the world. God points out properties of the physical world along with selected examples of animals and birds. From these God expects Job to deduce the principles by which God designed, created and maintains the world, but leaving these core principles unspoken. God demonstrates patience and accommodation toward Job by explaining creation to him in this way.

Job 38-39 contains 17 stanzas, the first 10 referring to physical features of the world followed by 7 stanzas giving short descriptions of 9 animals and birds. Chapters 40 and 41 contain two longer descriptions of the Behemoth and the Leviathan, two striking creatures.

I will summarize features of the speeches, and in them we will find aspects of creation related to the type of evil that Job suffered, evil that can be classified as due to natural calamities. The broad question is, how can God's goodness and power exist alongside a world of suffering caused by natural processes such as earthquakes, floods and storms of all kinds, devastating illnesses, birth defects, nature red in tooth, and the physical death of living things throughout creation, including the death of humans? The calamities suffered by Job fall into a category of evil called natural evil (sometimes called physical evil.) In the latter part of this talk I will focus on a feature of natural evil prominently implied here in Job, namely, randomness or chance in physical process. Finally, I will suggest some implications for ministry as followers of Jesus are called to respond to victims of natural evil.

First, a quick overview of the biblical text. (You should all have copies.) Following God's initial statement to Job (38:1-3) the Voice in the whirlwind describes the structure of the world in the next stanza (38:4-7). We read that God claims high skill and competence in planning, constructing and continuing to **manage and nurture** his creation in a consistent way. God created everything with a purpose, but many of his purposes do not directly relate to humans. There is no evidence of **UNPLANNED randomness (chaos) in creation – no surprises** for God - and **no indication in the speeches of anything that needs fixing up**. God **knows his creation very well**, for he has planned and measured it, and has a purpose for each aspect.

An example of God's management is related to the seas (38:8-11). The sea can be dangerous, stormy, unpredictable, chaotic - the sea can be destructive. But the text indicates that God set boundaries that the sea cannot normally cross, resulting in the establishment of dry land. The unpredictable, random behavior of the sea has limits set by God.

In verses 12-15 the Voice declares that creation is renewed by God as each new day is created. This signifies the **continuation of the creation process in a way that exhibits regularity or consistency**. There are many aspects of creation that we can count on. And because of this faithful consistency, **the study of creation (science) is a worthwhile endeavor**.

The speech opened with the Voice chiding Job for not knowing enough – and apparently Job does not know enough about creation, for creation is what the entire speech is about. The implication is that **WE ignore creation (and hence science) at our peril. Our understanding of creation is the key to understanding God's plan for creation, and this is a prerequisite for understanding natural evil**.

In the next two stanzas the Voice points out the existence of the underworld and the realms of light and darkness (verses 16-21), implying that **there is more to creation than the eye can see**.

The next four stanzas (38:25-38) depict in various ways that God has created an eco-system that nourishes the earth and its inhabitants with all forms of water – rains, dew, frost, ice and snow, and has provided means for spreading these across the world – many times in a gentle way, but sometimes in torrents, sometimes accompanied by lightning, and sometimes accompanied by destruction - floods, tornados, hurricanes, tsunamis, tidal waves, blizzards, storms of all kinds. And east winds (implying destructive winds) are scattered over the earth

These destructive effects imply another aspect of creation – **the suffering of creation** resulting from the way creation was planned and continues to be carried out, even at the present time. This **natural evil** is a part of creation. Here natural evil results from the destructive distribution of water in its many forms and wind over the earth. An example close to home is the tornado that devastated Joplin, MO a year ago. **These verses imply a random aspect to a number of physical processes occurring on the earth.** If God directly controls each rainfall, then tornados, tsunamis and floods are a result of God's direct action. But what if the distribution of rainfall across the surface of the earth is a result of processes inherent in creation, and what if there is an aspect of inherent randomness to these processes? One positive consequence of this randomness is to ensure that, over time, a given area of land tends to receive the rainfall it needs for life to thrive. **Could it be that the randomness that many times results in conditions for nurturing the earth will also sometimes result in conditions for suffering?** Is this consistent with what we know about God – or think we know about God?

The remainder of the first speech and the entire second speech is given to descriptions of certain birds and animals, eleven in all. A few characteristics stand out.

- 1). Some animals are featured that that are born to hunt prey to get food for their young, and as such here are examples of **blood and suffering in the world of living things. There is an order to creation;** this includes a food chain that involves suffering, blood and death in the hierarchy of animals and birds.
- 2). The animals and birds chosen exhibit **diversity**, another hallmark of creation.
- 3). Most of the animals and birds described are useless to humans.
- 4). There is no criticism by the Voice of any of the creatures discussed.

What can be learned about natural evil from God's two speeches to Job? We have several suggestions.

1). There is no hint of anything wrong with the universe or with our world. Creation, including the animals and birds, seems to have come out as planned. God has created everything with a purpose. And there is no hint of nature having fallen into sin.

2). Unfortunate things can happen to people, animals and the environment because of the way the universe is – a universe that was planned and is upheld faithfully and wisely by God.

3). There are two consequences of natural evil. One is that creation **suffers**. The other is that creation **exists**. Our world would not have developed in the way it has, and our existence as humans would not have come about if the universe - its laws and its physical parameters - had been anything other than what they actually are.

4). There is lawful randomness in nature. This randomness is **lawful**, because the universe operates under the laws of physics, chemistry and biology. Weather, genetics and disease are at least partly understood in terms of these laws. But there also is a **random** aspect, resulting in events that appear hit and miss because of our inability to predict their exact occurrences.

5). Nature has been given freedom to explore possibilities. Developing the previous point a bit further, our universe and earth are in some ways open systems and not to be understood as under strictly deterministic principles. Some have said that God has given free will to humans (to do good or evil), and that nature has also been given a certain dimension of freedom. In addition to lawful randomness the possibility of miracles and answer to prayer are also consistent with a universe that does not operate under completely deterministic principles.

6). Nature demonstrates God's faithfulness. The existence of natural evil is actually a sign of God's faithfulness. Natural evil is the necessary accompaniment of a structured world. The absence of widespread miracles is also a sign of God's faithfulness. It is better for the health of the universe that not all prayers for healing are answered in the way requested, for one requirement for new life is the death of the now living. And yet God is actively involved in nature and actively upholds all of creation and its laws through the Son (see Col 1 and Heb 1). God ordained how nature operates, and a lawful universe is to be preferred.

7). God's knowledge - God knows the universe and its life intimately. God knows all of the details – nothing about the universe is a surprise to him in the sense that his overall purpose for the universe is threatened. In contrast, Job's knowledge was defective and incomplete.

In summary, the Voice does not deny the existence of natural evil. Its effects play a prominent role in the two speeches. Natural evil is a necessary consequence of God's carefully devised and good plan for our universe and our world.

Now I would like to focus on one feature of our physical world, a feature that is routinely ignored when thinking theologically. The Voice showed Job a number of examples in our physical world that imply an inherent randomness. Question – do Christians have a bias against this idea? Is a theologically satisfactory position the claim that God has planned every physical event? I would like to explore the nature of randomness and how it is clearly present in our physical world; a world that the Voice declares has been and is being created and upheld by God.

1). The nature of randomness

Randomness or chance essentially means unpredictability, whether the randomness is inherent (in principle) or simply a result of incalculability (in practice). Total chaos is not the result because the laws of nature put bounds on the behavior of any physical system.

The following are examples of randomness in the natural world.

A). Radioactive decay – Radioactive decay is well-understood in terms of nuclear and electromagnetic forces and the microscopic laws of motion described by quantum theory. Predictions of the decay constant for a given radioactive nucleus can be calculated, which in turn leads to a specification of the half-life for that nucleus. The only problem is that if we focus on any single nucleus, say a single Cs-137 nucleus, the half life means that there is a 50% probability that this (or any) nucleus will decay at some time (we cannot say exactly when) during the half-life period – in the case of Cs-137, a time span of 30.0 years. However, if we have a reasonable size sample of Cs-137, say 100 grams (about 3 ounces), this will contain some 4.4×10^{23} Cs nuclei (quite a few!!), and applying statistical theory to a sample of this number of Cs nuclei leads us to say that after 30.0 years have passed, half of the original number of nuclei (or 2.2×10^{23} nuclei) will remain in that sample, with the other half of the original sample having undergone decay. In one sense this is a random process. There is no way of predicting which of the nuclei of the original sample will decay in any given interval of time. Each of the nuclei in that sample has a 50% chance of surviving the 30.0 year period. We know how many will survive; we just don't know which ones will be the lucky ones.

It's much the same way in the life insurance business. Given a large enough sample of 75 year-old men, an insurance company knows fairly precisely how many of these will survive to

the end 2012. In fact, the insurance company knows this number so well that it can make money insuring the lives of these men. The company knows how many, but not which ones will die.

These are examples of what we call lawful randomness. In the nuclear case, the half-life can be calculated from the principles of quantum mechanics, nuclear physics and the general laws of nature such as the conservation laws, like energy, momentum and charge, to name a few. The half-life does not give a precise measure of when any given nucleus will decay, but it gives an accurate measure of the survivability over time of a large enough sample of these same nuclei. This is lawful randomness and is an inherent physical property of our universe. This is the way the universe is.

B). Skin cancer. It is well known that skin cancer is induced by ultraviolet radiation from the sun. Ultraviolet radiation consists of high energy photons that can alter molecules that comprise human skin. But not every ultraviolet photon will initiate skin cancer – only a very small percentage of those photons incident on the skin. This is another random process in much the same way that radioactivity is. Once again, the overall understanding of the interaction of photons with skin molecules is well known, but just as in the case of radioactive decay, the scientific understanding is in terms of calculations of probabilities that do not give certainties of the exact effects of a single photon incident on human skin. And so, here we have another example of a random process that operates under well understood physical law. And of course, we are fortunate that not every high energy photon with the potential of inducing skin cancer will actually do so.

C). The Voice did not discuss nuclear physics with Job. But the Voice spent some time on the subject of the distribution of water over the surface of the earth. In terms of water, the earth

including its atmosphere is a closed system. The water-cycle includes evaporation from the surface of the earth followed by distribution over the earth in the form of water, ice and snow. This distribution is partially random, depending on a number of well understood factors such as surface temperature, prevailing wind directions, ocean currents to name a few. But butterflies in the Amazon and other irregular natural factors are influences that make weather patterns erratic and at least partially unpredictable – in other words, random. Water distribution over the earth can be accounted for by deterministic equations. Mathematically the problem is that specifications of the conditions at some particular time are a crucial step in solving these equations to get weather predictions, and these initial conditions cannot be specified with enough accuracy to insure a precise determination of the time development of the weather system. And even if the initial conditions could be precisely specified, the exact solution to the equations describing the system is beyond the ability of our computational methods. So epistemologically, we have at least a partially random situation in terms of weather predictions. General patterns of weather can be predicted using the deterministic laws of meteorology, but precise predictions are generally difficult or impossible because of the chaotic nature of weather systems resulting from their exquisite sensitivity to details of their initial conditions.

D. Evolutionary process. Scientists working in the field of biological evolution recognize the role of chance in the evolutionary process.

These examples are but a small sample of physical processes that are fundamentally random, but at the same time constrained by physical law. Nature's operation includes a component of "lawful randomness."

And finally, genuine chance insures fair play. We would be upset to find that nature's dice were loaded.

3). Is idea of the existence of randomness in nature consistent with God's attributes?

Among attributes normally associated with God, only certain ones have any relation to physical process – omnipotence, omniscience and omnipresence. These three need to be considered, and James Bradley does so in the article “Randomness and God's Nature,” found in *Perspectives on Science and Christian Faith*, Journal of the American Scientific Affiliation, June 2012 issue, p. 75ff. He argues. “...that the scientific concept of randomness and the historic Christian understanding of God's nature are compatible.” He further writes, “Randomness can be viewed as a subtle expression of God's wisdom.” Unfortunately time constraints do not allow further discussion of this work by Bradley..

4). What are some consequences of this randomness?

There are both good and hurtful consequences. As already noted, the distribution of water in various forms and places is an example of randomness in nature. The May 2011 tornado that hit Joplin, MO killed 158 people, injured about 1000 more and caused \$2.8B in damage. This ranks among the world's worst tornados in recorded history. Many lives were negatively affected by the particular but limited path taken by this storm. And yet many more Missourians received nurturing rain from that storm.

The same ultraviolet rays in sunlight, when absorbed by the skin, can induce deadly skin cancer but also produce vitamin D, an essential vitamin needed by all people.

The random distribution of earthquakes across the world is responsible for producing new Colorado Rocky or California High Sierra mountain ranges while this same phenomenon destroys cities and kills and injures people.

The randomness involved in reproduction of living beings, whether human, animal or plant, both produces birth defects but can also result in beneficial genome alterations that allow the species to adapt to changing earth environments.

5). How do we as humans, as followers of Jesus, respond to the fact that we live in a world where natural evil and random events are part of the fabric of this world? We, our loved ones and friends can be victims of natural evil. We can be hurt, fall ill, and sometimes die as a result of natural evil. First, we must realize this has not occurred because of sin or the fall. It may be because of the way nature is – disease, genetic weakness, all sorts of natural disasters like tornados, accidents, - to name a few. Natural evil may be the result of poor decisions made by humans, including possibly us. In response we can use resources available to us – family, friends, government, our ingenuity. In addition we have the good gift from God in the natural healing that so often is a part of our existence. We pray for relief and strength, and for good to come of our situation. But we should not forget that natural evil exists as part of how the world and universe goes forward in a healthy, creative way. One principle of the bio-sciences is that new life is at least partially dependent on the death of creatures, including humans, that are alive now. In a sense the death of the now living represents a sacrifice for the ongoing welfare of our world.

For our neighbors – both near and world-wide - we have a responsibility. Jesus identified with Isaiah when he said that he came to give sight to the blind, healing to the lame, and release

of the captives. Jesus came at least in part to bring relief to victims of natural evil. We can do no less than to work to relieve suffering of all kinds – whether it is the result of natural or moral evil. We are to be salt and light in the world, spreading goodness wherever we are. We are to be people of whom it is said that goodness occurs because of us.