# Making Sense of Natural Disasters:
# An Islamic Hermeneutics of Malevolent Phenomena in Nature and Its Implication for Sustainable Development

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## Abstract

Islam states that both natural phenomena and humanity are created in the best conceivable pattern. Yet the physical world experiences occasional disasters that threaten sustainable development. This study seeks to provide a framework for understanding this phenomenon within the Islamic ethico-religious perspective by focusing on such natural disasters as earthquakes, cyclones, subsidence, and floods. In an attempt to demonstrate this, I highlight the Qur'anic perspective of how natural resources have been overwhelmingly a source of boon and occasionally a source of bane.

Drawing on that perspective, I provide two accounts for a proper understanding of this phenomenon: a macroscopic perspective that dissociates disastrous effects from natural disturbances, and another perspective that, based on moral law, attributes disasters to humanity's violation of the divine moral law. That is, natural disasters are not disastrous to all creations unless they befall vulnerable communities, and when they are disastrous they are not natural but human-induced. Both perspectives suggest the imperative of the ecosystem and the divine moral law in the course of social and natural development.

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## Introduction

Natural disasters exact a heavy toll of death and property destruction. Nowadays, the magnitude and frequency of such phenomena appear to be escalating. The number of deaths from natural disasters worldwide per year rose from 23,000 in the 1960s to 143,000 in the 1970s.[1] The total number of reported disasters also rose sharply, from 368 in 1992 to 712 in 2001. Within the same period, the number of people affected increased dramatically, from 78,292,000 to 170,478,000.[2] The economic cost, in terms of property damage, increased fourteen-fold between the 1950s and the 1990s.[3] Some studies put the total economic cost of natural disasters in the early 1990s at more than $100 billion per year, along with other extensive disruption of the economic infrastructure.[4]

Such catastrophic phenomena have baffled many intellectuals from all walks of life. According to some scholars, nature is red in tooth and claw, a vale of tears and hostility bereft of any overriding moral meaning or purpose of existence. Thomas H. Huxley cautions that we should neither imitate the cosmic process in our societal ethics nor run away from it; rather, we should combat it: "Thus, brought before the tribunal of ethics, the cosmos might well seem to stand condemned. The conscience of man revolted against the moral indifference of nature, and the microcosmic atom should have found the illimitable macrocosm guilty."[5] John Stuart Mill brands nature as an "odious scene of violence and tyranny."[6] George Williams describes it as "a wicked old witch" hostile to human life and values.[7]

For many of these scholars, such calamities are fundamentally attributable to nature's innate wickedness and internal defectiveness, while human beings are just passive victims. The best solution, then, is to master nature technologically. The Reader's Digest Association recognizes natural disasters as "an inevitable part of the natural cycle of destruction and renewal." Such a disaster, however, "has sometimes altered the course of human history for the better."[8] The "better" course referred to is "quake-proof" building, such as the one in Mexico City that reportedly withstood the 1985 earthquake. Thus, nature is portrayed as a formidable opponent. But with intelligence and enough technological muscle, human beings may change the conditions of existence and rid the world of natural disaster.[9]

This pessimistic, technocratic view of disaster provides no good image of nature and no good solution to its disturbances. True, our increased knowledge of how Earth functions has helped us enormously; however, it has not protected us from nature's wrath. For instance, David A. Johnston of

the U.S. Geological Survey, along with other scientists, was certain that a major eruption from Mount St. Helens would occur soon, but could not tell exactly when. When it finally erupted some eight weeks later, he was one of its victims.[10]

A spiritual interpretation provides another perspective: that of natural disasters being a visitation of Providence to punish errant people. But what exactly constitutes an error has never been agreed upon. On November 1, 1755, a disastrous earthquake followed by a tsunami destroyed nearly two-thirds of Lisbon, despite its reputation as an extremely pious town. All of those at church were buried within the ruins.[11] More recently, on December 26, 2004, the Indian Ocean tsunami overwhelmed a flood of tourists in a Thai beach hotel but inflicted a heavier casualty on Aceh, a place regarded by many as the most pious in Southeast Asia. While Muslims were impressed by the survival of Banda Aceh's Baiturrahman Great Mosque, Buddhists were equally astounded by the survival of several Buddha statues amid collapsed brick walls in Galle, southern Sri Lanka. Other religious icons were not spared. This apparent "indiscriminate" destruction of people and their property is enigmatic to many dissenting voices. How could the artifacts survive while their architects, builders, developers, and occupiers did not? Would not the world be a better place without such disasters? These, among other questions, make it untenable to account for natural disasters from an entirely spiritual framework.

A third framework seeks to bridge the gap between the technocratic and the spiritual frameworks, one that relies on the interconnectedness between humanity and all other living things. It suggests that a proper recognition of this interconnectedness would help humanity learn from the changed behavior of some animals, whereby we could evacuate vulnerable communities beforehand. Though critical of the modern scientific solution, even this approach attributes disasters to nature. As Chandra Muzaffar states, "natural calamities are as much a part of our existence as human tragedies. They happen. We learn to live with them. And to accept them."[12]

These diverse interpretations have enormous implications for the belief or disbelief in God's existence. For atheists and pessimists, this might not pose a serious problem; on the contrary, it will be seen as evidence of the disenchantment of nature and the purposelessness of existence. As for those who believe in God's existence and role as creator, they are faced with the conundrum of how to give a coherent account for such devastating natural events within the parameters of their optimistic outlook. In an Islamic context, how do such disasters fit into the Islamic worldview that everything has

been created in due proportion and for a certain purpose? Is "chaos" purposive, intelligently designed, and diligently encoded within the cosmos? If so, how could God's providence be better appreciated?

This study seeks to decipher the phenomenon of natural disasters within the Islamic ethico-religious perspective. To do this, two grounds are provided: One grapples with the "disaster" and the other with the "natural" nature of this phenomenon. On the first ground, based on a macroscopic perspective, I argue that when these phenomena are natural, they cannot be disastrous. On the second ground, associated with "divine moral law," I assert that when they are disastrous, they cannot be natural; rather, they are human-caused or human-exacerbated. Both accounts are grounded in the Islamic worldview provided in the first section and reinforced in the fourth section. The last section provides the implication of this line of reasoning for social and natural development.

I adopt a textual analysis approach based on event observation and decipherment and use statistics to compare the number of natural disaster casualties with that of the world death rate. The scope of the study is restricted to disasters commonly attributed to nature, such as earthquakes and floods. The phrase *natural disasters* is used only for the sake of convenience; otherwise, it is this very juxtaposition that I seek to disentangle.

## The Islamic Perspective of Natural Phenomena

Understanding the Islamic attitude toward nature is necessary for understanding the Islamic perspective of natural disasters. In the Islamic worldview, everything in nature is created by God, scrupulously measured both qualitatively and quantitatively, and designed to serve a purposive task in the universe's overall system. God states: "Verily, all things have We created in proportion and measure" (54:49). Nothing in the universe, including natural resources, was created purposelessly: "We did not create the heavens, Earth, and all between them merely in (idle) sport. We created them only for just ends" (44:38-39).

Although the Qur'an maintains humanity's superiority as *khalifat Allah* (God's vicegerent) over other creations (17:70; 45:13), it does not necessarily follow that these other creations have no other purpose but to serve human beings. They are equally creations of God, autonomous *ummahs* (communities) that worship their Creator on their own terms (6:38; 17:44). In addition, they perform an aesthetic function as constituents of biodiversity, which the Qur'an often counts as part of the *ayat* (signs) of God for peo-

ple of understanding (6:99; 13:2-4). Moreover, the Qur'an recognizes the physical world as *ayat* of God (2:164; 3:190; 6:97, 99; 30:22-25; 41:53; 27:88; 67:3-4), just as it considers the Qur'an's verses as *ayat* (2:99, 252; 3:101, 108, 113; 4:140; 8:2, 31; 12:1; 15:1; 19:58; 27:1; 28:2; 31:2). The Qur'an is clear of any contradiction; nature is equally devoid of any flaw. As it states:

> He Who created the seven heavens one above another: No want of pro-portion will you see in the Creation of (Allah) Most Gracious. So turn your vision again. Can you see any flaw? Again turn your vision a second time. (Your) vision will come back to you dull and discomfited, in a state worn out. (67:3-4)

A reference to this nexus of beings can be found mainly in two Qur'anic terms: *qadar* or *miqdar* (measure) and *mizan* (balance). First, everything is said to have been created in well-defined parameters: "Verily, all things have We created in proportion and measure" (54:49) and "Every single thing before His sight is in (due) proportion" (13:8). Second, everything is said to have been created in a delicate balance that must not be overused or under-used: "And the firmament has He raised high, and He has set up the balance, in order that you may not transgress (due) balance. Keep up the balance with equity, and do not fall short in the balance" (55:7-9).

To demonstrate how complex and interconnected the chain of beings is, scientists have identified a number of parameters of planets, moons, stars, and galaxies, as well as parameters of the universe, that must have values carefully defined and fixed for any conceivable life to exist. One example of this is supernova explosions. If too close, too frequent, or too late, life on the planet would be exterminated by radiation; if too far, too infrequent, or too soon, not enough heavy elements would exist for the formation of rocky planets. Likewise, if the gravitational force constant were larger, stars would be too hot and would burn up quickly and unevenly; if smaller, they would remain too cool for nuclear fusion to take place and thus could produce no heavy elements.[13] As Paul Davies puts it, "the catalogue of extraordinary physical coincidences and apparently accidental cooperation … offer com-pelling evidence that something is 'going on.' … A hidden principle seems to be at work, organising the cosmos in a coherent way."[14]

This perspective is maintained even though there are disasters associated with nature. The term *natural disasters* is normally translated into Arabic as *al-kawarith al-tabi`iyah* or simply as *al-jawa'ir*. However, such terms have no root in the Qur'an or the hadiths. No word in these sources could even rep-

resent the concept of natural disaster. Instead, the Qur'an mentions several natural cataclysms by name, such as *rajfah* (earthquake) (29:37), *tufan* (flood) (29:14), *hasib* (violent tornado) (54:34) and *sayhah* (mighty blast) (11:67, 94). In addition, these natural disasters were restricted to particular nations at particular times. It would be instructive to compare how "wind" and "water," among other natural resources, are seen as a bane for a particular people and as a boon in general for humanity and many other creations (e.g., compare 51:41 and 29:14 with 15:22 and 25:48-49).[15] As Hamzah observes, these natural phenomena and resources are primarily benevolent, but may become malevolent when misappropriated.[16] The only global natural disasters are those associated with eschatological incidents related to the Last Day or the Hereafter (e.g., 22:1; 99:1).

## The Macroscopic Perspective

When seen from a general, macroscopic perspective, natural disturbances need not necessarily be disastrous. They are disastrous only when seen from an anthropocentric perspective, which interprets or regards the world only in terms of human values and experiences. Many species and ecosystems are adapted to natural disturbances, and some actually depend upon them for their continuous existence and vitality. For example, many forests and grasslands depend on periodic natural fires to burn off dead vegetation, revitalize soil fertility, and emit seeds. A bird known as Kirtland's warbler nests only in recently burned forests. Likewise, numerous plants and animals have adapted to periodic flooding. Many plants germinate and absorb newly available dissolved nutrients mostly during a flood. Migratory birds also rely on a flood's bounty. As the ground slowly absorbs floodwaters, underground aquifers are refilled. Fish use the floodplain as a spawning ground and a nursery for their young, and some of the largest fish and crop harvests come the year after a flood.[17] Having satiated the thirst of other creations through its disturbances, nature is endowed with a resilient mechanism to replenish human needs and maintain ecosystems.

Instead of letting these disturbances take their due course, humans stubbornly stand in their way. What is deplorable, as William Freudenburg states, is not that Mother Nature might suddenly send an unpredictable event to such a hapless location, "but that so many humans would choose to establish their homes in regions where hurricanes and earthquakes … are altogether *predictable*."[18] From the biocentric perspective, people have undoubtedly trespassed their limits, encroached on the rights of other beings that are constituents of

nature, and have transvalued the entire biosphere anthropocentrically.[19] If, then, all other living organisms (viz., non-human biotic communities) could speak or understand one another, they would have hauled humanity before the court of universal justice. Such a biocentric view is not necessarily inimical to the Qur'anic concepts of *khilafah* (vicegerency) and *taskhir* (subservience), in which humanity is recognized as a trustee on Earth and the master of nature. As Seyyed Hossein Nasr and Abd-al-Hamid observe, these concepts do not violate or contradict the ecosystem.[20]

Islam, as the religion of all creation, requires a holistic approach to this natural phenomenon that accounts for all that exists. The Qur'an speaks of non-human living things as autonomous *ummahs* (communities) comparable with human communities and that their provisions and sustenance are supplied by God: "There is no animal (that lives) on the earth, nor a being that flies on its wings, but (forms part of) communities like you" (6:38) and "There is no moving creature on the earth but its sustenance depends on Allah. He knows the time and place of its definite abode and its temporary deposit. All is in a clear record" (11:6). It also states that the earth and water, in particular, are made for all creatures (25:48-49; 55:10).

Even within the anthropocentric but impersonal perspective, we arrive at a more sober and holistic apprehension of natural disasters. People die from extreme poverty or extreme luxury, some die a natural death or by accident or war, and many others for unknown reasons. Death due to natural disaster is another pathway of death. That such deaths occur does not change the fact that death is an integral part of life. In fact, some technological disaster researchers conclude that "technological disasters create a far more severe and long lasting pattern of social, economic, cultural and psychological impacts than do natural [disasters]."[21]

However, despite the death toll from natural disasters, the world population is still rising. The world death rate is less than one-half of the birth rate. According to an Earth Policy Institute report, the 2004 world birth rate was 20.85 per 1,000 persons, and the world death rate was 8.9 per 1,000 persons, thereby adding a 1.2 percent growth rate to the world population.[22] According to the Population Reference Bureau, the world population for the year mid-2004 until mid-2005 was 6.3 billion, out of which the world birth rate was 21 per 1,000 persons, minus the world death rate of 8.83 per 1,000 persons. Thus, the world population grew by 1.2 percent.[23] For the same period, the CIA's *World Factbook* gave the following figures,[24] as shown in table 1.

**Table 1: The annual rate of natural population change (%) = (birth rate - death rate)/1000 persons x 100 = net growth (%). Estimates cover Dec. 2004.**

| Source | World Pop. | Year | Birth Rate | | Death Rate | | Net Growth | |
|---|---|---|---|---|---|---|---|---|
| Earth Policy Institute | 6.37 billion | 2004 | Annual: 133 mil. (20.85/ 1,000) | Daily: 364,383 | Annual: 57 mil. 8.9/ 1,000 | Daily: 156,164 (tsunami death toll 200,000) | Annual: 76 mil. (1.2%) | Daily: 208,219 |
| The World Factbook | 6.44 billion | 2004/ 2005 | 130 mil. (20.15/ 1,000) | 356,164 | 56 mil. (8.78/ 1,000) | 155,060 | 73 mil. (1.14%) | 201,104 |
| Population Reference Bureau | 6.47 billion | 2004/ 2005 | 136 mil. (21/1,000) | 372,649 | 58 mil. (9/1,000) | 159,706 | 77 mil. (1.2%) | 212,942 |

Source: Date aggregated from Earth Policy Institute, *The World Factbook*, and the Population Reference Bureau.

In the case of the tsunami death toll, estimated at 200,000, the implication is that the world's daily birth rate is much higher than the tsunami's death toll. The world could give back within *a day* almost the same number it took away by the tsunami and the world's average daily death rate combined. Had the tsunami not happened, it would have taken less than two days for the world to lose the same number of people. It also indicates that the world's population did not decrease because of the tsunami, although its growth rate might have slowed down slightly. One might expect that Indonesian's (the country most affected) annual rate of population growth would have been affected. But this was not the case, as indicated in table 2 and figure 1.

**Table 2: The Indonesian annual death rate per 1,000 persons. July 2005 estimate covers December 2004.**

| Indonesian Population | Year | Birth Rate | | Death Rate | | Net Growth | |
|---|---|---|---|---|---|---|---|
| | | Annually | Daily | Annually | Daily | Annually | Daily |
| 241,973,879 | 2004/ 2005 | 5,011,279 (20.71/1,000) | 13,729 | 1,512,336 (6.25/1,000) | 4,143 | 3,498,943 (1.45%) | 9,586 |
| 238,452,952 | 2003/ 2004 | 5,033,741 (21.11/1,000) | 13,791 | 1,492,715 (6.26/1,000) | 4,089 | 3,541,026 (1.49%) | 9,701 (cont.) |

| Indonesian Population | Year | Birth Rate | | Death Rate | | Net Growth | |
|---|---|---|---|---|---|---|---|
| | | Annually | Daily | Annually | Daily | Annually | Daily |
| 234,893,453 | 2002/ 2003 | 5,047,860 (21.49/1,000) | 13,829 | 1,470,433 (6.26/1,000) | 4,028 | 3,577,427 (1.52%) | 9,801 |

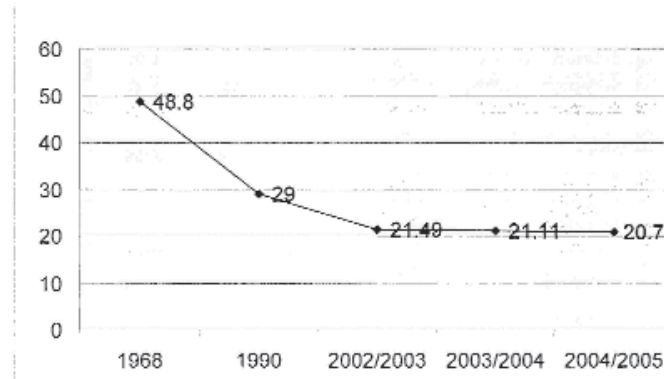Source: Based on *The World Factbook* database.

**Figure 1: Indonesian annual death rate per 1,000 people.**
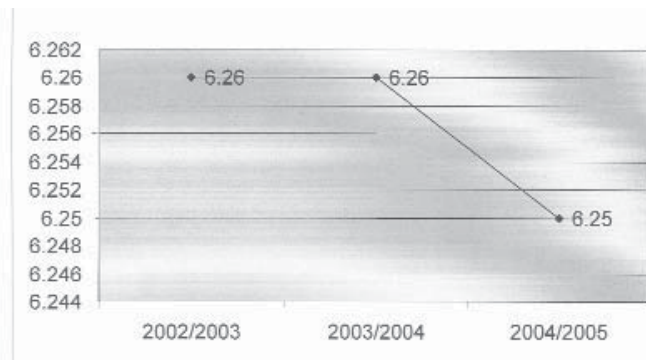


Source: Based on the *World Factbook* database.

The annual net growth of 2004-05 slowed down slightly when compared to the preceding two years. However, this was not due to the tsunami's death toll, but rather to the decreased annual birth rate. This decrease may be attributed to at least two factors. First, the tsunami-related death of many pregnant women who were, presumably, expected to contribute to the Indonesian population; second, the success of Jakarta's and other agencies' birth control campaign. The first assumption is unlikely, for no study backs that probability. The second possibility is more likely, because the annual birth rate was already declining, as indicated in figure 2. According to the Library of Congress' Federal Research Division, the reason behind this overall decline in fertility rates is largely due to the effect of the National Family Planning Coordinating Agency's programs.[25] The net conclusion is startling: *The very year that the tsunami struck the region, taking the life of over 120,000 people, had comparatively the lowest annual death rate per population.*

This has nothing to do with the population reduction theory or replacement-level fertility, about which some Muslim economists have serious doubts.[26] While it is indeed a tragedy to lose so many people, nothing happens purposelessly at the macroscopic level of understanding. The Qur'an

**Figure 2: Indonesian annual birth rate per 1,000 people.**



Source: Based on the *World Factbook* database.

reiterates that death is unavoidable for every living creation (3:185; 4:78), and that nothing can outlive its appointed term, even humanity (6:59-62; 7:34; 39:42). As to the number of people who would die daily, the Qur'an obviously remains silent.

Of course, at the micro level the death of one person is the loss of everything in life or the end of the world for the bereaved. But at the macro level, such an incident may have a far-reaching positive effect in the long run. How often one is faced with events that seem disgusting and unfair, but nevertheless have the potential to draw one into the wisdom of a higher order of truth. Reflecting upon the tsunami, Caroline Myss observes that "all of the events and all of our relationships are interconnected, part of a grand weave. Something that happens today that makes no sense may be laying the groundwork for something that will happen five months or five years from now, and not until then will we understand or appreciate why that event had to occur."[27] The inner meaning of history, Ibn Khaldun reminds us, "involves speculation and an attempt to get at the truth, subtle explanation of the causes and origins of existing things, and deep knowledge of the how and why of events."[28]

What salutary lessons could the disaster hold for its victims, particularly for the tsunami victims? No conclusive answer can be given at this point in time and place, for giving an in-depth account of an historical event or phenomenon requires going beyond the immediate concern. Just as a comprehensive interpretation of a text cannot be coherently achieved without reading it thoroughly to the end, no complete account of a historical event can be given before its final process. We are still part of that historical event, particularly here in Southeast Asia, and the memory of the victims is still

fresh in our minds. This prevents us from seeing the event from without. Nevertheless, we can still speculate about possible indicators.

First, the epicenter of the tragedy is Aceh, where an independence struggle has torn the region apart over the last three decades, inflicting pain and casualties not only on freedom-fighters but also on many innocent people. It is shameful and religiously condemned to raise arms against one another, particularly within the Muslim community. As Prophet Muhammad said: "If two Muslims take out their swords to fight each other, then both of them will be from amongst the people of the Hell-Fire." It was said to the Prophet: "It is alright for the killer, but what about the killed one?" He replied: "The killed one had the intention to kill his opponent."[29]

To continue such an indefinite resistance puts the freedom-fighters on the same blameworthy footing as Jakarta. It is not clear if these fighters would not have faced a similar fate as a result of their resistance. As they have already met their fate, the ball is now in Jakarta's court. For its part, in the wake of the tsunami Jakarta made positive overtures toward the region. Foremost among these is the peace pact granting Aceh a form of local government provided that the Free Aceh Movement drops its demand for independence. According to some international observers, the "implementation of the pact … has so far exceeded the expectations."[30] On December 29, 2005, Indonesia withdrew its final batch of non-local troops from the region. During the farewell ceremony, Aceh military commander, Supaidin Adi Saputra, had the following to say:

> We realize that eternal peace is the desire of all Acehnese. Let us create a peaceful atmosphere and free the people of Aceh from fear and danger, both physical and non-physical[31] ... The flame of peace is burning and we must not let anyone extinguish it.[32]

In the final analysis, only time will reveal the tsunami's full implication on the region.

The macro-based approach hitherto proffered should not imply that divine providence is directed only toward humanity as a whole and not individuals, as some Muslim philosophers would have us believe.[33] It primarily requires going beyond the immediate and short-term concerns that might constrain or impair the correct understanding by underscoring the interrelationship between an individual part and the whole of which it is a part (e.g., between individuals and their community as well as between humanity and other biotic communities). In such a hermeneutical circle, the meaning of *whole* has to be derived from its individual parts, and an individual part has

to be understood in relation to the comprehensive whole of which it is a part. Every part experiences something of the whole of life, just as its own significance depends on the whole, insofar as life – at least in the Islamic perspective – presupposes a unity of meaning and a purpose of existence.

## Violating the Divine Law

Another way of unraveling the phenomenon of natural disasters is by recognizing a human hand in such incidents by examining the extent to which humanity observes the laws meant to ensure the universe's stability and sustainability. This divine law may be divided into two categories: physical law (the law of nature) and moral law.

Physical law refers to "a generalized statement of natural processes … conceived as imposed upon nature by the Creator, as representing an intrinsic orderliness of nature or the necessary conformity of phenomena to reason and understanding."[34] A rule of necessity and involuntary actions in the natural world governs everything that is involuntary (e.g., involuntary states and actions of the human mind), as well as the law of automatic sequence, necessity, force, and cause and effect, such as the laws of gravitation, electrical induction, motion, and quantum mechanics.[35] Moral law, by contrast, is "a general rule of right living, especially such a rule or group of rules conceived as universal and unchanging and as having the sanction of God's will, of conscience, of man's moral nature, or of natural justice as revealed to human reason."[36] It is a rule of free will, including what is caused by free will, as well as the law of intelligent action and responsible choice, as opposed to involuntary or necessary action.[37]

In Islam, moral law is best represented by *al-kulliyat al-khams* (the five universals), the categorical imperatives necessary for the physical and spiritual well-being of individuals and societies, to the extent that their destruction or collapse would precipitate chaos and the demise of the normal social order. Islamic law promotes, preserves, and protects these five fundamental values, which are religion, life, progeny, intellect, and property.[38] Most of these values, if not all, can be, and indeed have been, shared by non-Muslims.[39] As Isma`il al-Faruqi observes, every community sees more or less of such values, but whoever sees less does not necessarily see falsehood. While every consciousness of value is a very serious consciousness, not everybody is conscious of all of the values that are present, possible, or absent in any given situation.[40] That is why the Prophet is reported to have said: "I have been sent only for the purpose of completing good morals."[41]

Even though these two laws operate in different spheres, they are two sides of the same coin preprogrammed by God. They function in tandem and affect each other. Since they operate by force and necessity, physical laws are inviolable by all living creatures. Moral law governs people's choice of action *in* and *with* the physical world. In other words, it governs moral agents living in the physical world and what they do with it. And because moral law obliges but does not effect, and persuades but does not coerce, it is not inviolable. It has been violated by human beings, who frequently choose a wrong course of action in the physical world, and increasingly in our modern times by manipulating the physical world for the worse. Nevertheless, both laws are equally imperative.

The Qur'an recounts some catastrophic chastisements inflicted upon previous nations that violated the moral law. Pharaoh and his soldiers were drowned after violating the "life" value by maltreating and exploiting the Jewish people and killing their first-born sons (7:127-41; 10:90-92; 28:4, 40). Prophet Lot's people violated the "progeny" value by their sodomy. As they valued all vice as virtue and a perverse, shameful act as a hallmark of maturity and pride, they were chastised with a rain of stones and their cities were turned upside down (11:77-83; 15:61-74). Prophet Noah's people violated the "intellect" value when they irrationalized all rational things and associated him and his followers with insanity. Thus, they were wiped out by a flood (11:25-44; 23:23-27; 54:9-14). Prophet Shu`ayb's people, the Madianites, violated the "property" value by committing themselves to economic corruption. Thus, they were punished with an earthquake accompanied by a devastating blast (7:85-93; 11:84-95). By their respective negative actions, aggravated by their unbelief, these bygone nations violated the "religion" value. Such a disciplinary chastisement, the Qur'an maintains, is not far from any unjust nation (11:83). The following verse refers to these perished nations:

> Each one of them We seized for its crime. Of them, against some We sent a violent tornado (with showers of stones), some were caught by a (mighty) blast, some We caused the ground to swallow, and some We drowned. Allah did not injure (or oppress) them. They injured (and oppressed) their own souls. (29:40)

These unsustainable communities had violated moral laws and thus made themselves vulnerable to disaster. Indeed, their continued persistence in wrong actions precipitated and exacerbated the disasters, which otherwise could have been averted. The torment that almost befell Prophet Yunus' people was lifted due to their repentance (10:98).

As regards the contemporary age, we have violated moral law through our actions not only *in* the physical world but also *with* the physical world. By our socioeconomic degradation and spiritual and moral bankruptcy, we violate the moral law *in* the physical world; by our maltreatment of the physical world and its biodiversity, we violate it *with* the physical world. While the first type of action is common to both ancient and modern societies, the second one is peculiar to advanced societies, such as ours. To exhibit contempt and even work against "nature's design" has been a hallmark of modern civilization.

Many modern western societies erroneously identify the violation of moral laws as an indication of maturity and the degradation of nature as prerequisites for scientific progress. Henry Buckle, writing on European civilization, proudly attributed the foundation of modern European civilization and causes of its progress to "the encroachment of the mind of man upon the organic and inorganic forces of nature."[42] As he made clear, "all around us are the traces of this glorious and successful struggle [against nature] … the advance of European civilization is characterized by a diminishing influence of physical laws and an increasing influence of mental laws."[43]

Such an encroachment has cost us tremendous environmental problems. According to many natural disaster sociologists, industrialization's intensified activities have exacerbated vulnerability and will increase the frequency and cost of disasters in the twenty-first century. Choices of development that are unsuitable for nature lead to "disasters by design."[44] For example, floods have often been instigated by human interference with nature. As Janet Abramovitz reports, the 1998 flooding caused by China's Yangtze River, which affected 223 million people, caused 4,000 deaths, damaged 61 million acres of cropland, and cost well over $36 billion, was primarily a human-precipitated disaster. Besides numerous dams and levees that had obliterated river valleys and cut off rivers from riparian habitats, respectively, extensive deforestation had been ongoing for several decades. Eighty-five percent of the Yangtze basin's forest cover has been cleared by logging and agriculture. The loss of forests, which normally intercept rainfall and enable it to seep into the soil, left many steep hillsides bare and allowed water to rush across the land, carrying valuable topsoil with it. As the runoff raced across the denuded landscape, it caused floods.[45]

Furthermore, the causes of climate change have been attributed to various mechanisms, the central one being the environmental pollution caused by modern humanity's insatiable lust for material progress. As the *Encyclopedia Britannica* acknowledges: "Over the last few hundred years, humankind has been directly influencing global and local climate."[46] Global climate

change is a slow-onset phenomenon that trades on technological advancement but brings with it the risk of more frequent extreme weather events that culminate in sudden disasters.[47]

To demonstrate how technology turns natural disturbances into a disaster, Murphy compares two cities that were exposed to the same natural disturbances with different results. The people of Quebec and northern New York's Amish people were exposed to intense, persistent freezing rain. Due to the Amish people's small, decentralized communities and use of the agricultural technology of seventeenth-century Europe, the ice storm did not collapse their lifestyle's essential infrastructure. By contrast, it inflicted colossal damage upon western Quebec's electrical system, causing the area's essential infrastructure to cease functioning and leading to Canada's most costly disaster ever. In short, Quebec depends on electrically based centralized technology that is prone to collapse under the weight of ice.[48]

Many environmentalists and natural disaster researchers regard some people as the villains of disaster. Due to human interference with nature, Theodore Steinberg and other researchers raise a serious doubt concerning the distinction between natural and human-induced disasters. As humans continue unrelentingly to make their imprint on the natural world by "clearcutting forests, altering the atmosphere, seeking to control earthquakes … and so forth, it has become increasingly difficult to discern the line between the natural and the cultural."[49] Terry Cannon has ruled out the existence of natural disasters altogether by developing his "vulnerability analysis" thesis to dissociate nature from inherent disaster. He persuasively argues that there is no such thing as natural disaster, for even though "the hazard is natural; a disastrous outcome is not, and is in many senses largely caused by the vulnerability conditions generated by human systems."[50] In other words, for a hazard to become a disaster, it has to affect vulnerable people. Moreover, "through negligence or inappropriate response, the workings of social systems have made a disaster out of situation which otherwise might not have been so serious."[51]

Charlotte Benson, looking at disaster from a macro-economic perspective, supports the argument on the ground that vulnerability to natural hazards is integrally related to the affected area's prevailing socioeconomic and environmental conditions.[52] This indicates that when people choose to manipulate nature's order for the worse, they make themselves naturally prone and vulnerable to disaster. As modern *technopoly* (the technocratic worldview) continues to urge unfettered technological advancement, we have become more vulnerable to natural hazards that are often exacerbated to the level of disaster by our persistence in that violation.

Ascribing disasters to the human violation of divine law suggests that these disasters are not natural *per se*, but are human-driven disasters. Umm Salmah, one of the Prophet's wives, said:

> I heard the Prophet say: "When sin becomes rampant among my *ummah*, they will be subject to an inclusive punishment from Almighty Allah." Then I asked: "O, Messenger of Allah, will there not be among them at that time righteous people?" He replied: "Yes, there will be … they will face the same fate. Then [on the Day of Judgment] they will return to [and be requited with] forgiveness from Allah and (His) pleasure."[53]

Said Nursi provided another justification for the inclusiveness of natural calamities, based on a "trial" framework. According to him, reality should remain ambiguous and the path to it highly competitive. Referring to Qur'an 8:25, which warns of tumult that might afflict wrongdoers and innocents alike, he makes the following unusual observation:

> This world is a field of trial and testing, and a place of responsibility and struggle. Testing and responsibility require that the truth in certain matters remains veiled so that, through competition and struggle, those like Abu Bakr may rise to the highest of the high while others like Abu Jahl may fall to the lowest of the low. If the innocent remained untouched in such disasters, the Abu Jahls would submit just like the Abu Bakrs, and the door of spiritual progress through struggle would be closed and the responsibility and testing would be meaningless. … [As for the innocents,] there is a kind of mercy behind the wrath … their death in the disaster may be regarded as a kind of martyrdom and therefore gains them an eternal life of happiness.[54]

Thus, it becomes untenable to regard natural disasters as morally neutral, objective events. Such an attitude adds little, if anything, to human knowledge, for it is like issuing a "natural death" certificate for a person who died from diseases associated with old-age. Such a naïve certificate does not help us to know any more about the disease's causes and look for an appropriate cure.[55] To prioritize moral causes while recognizing the disaster's apparent physical causes, Nursi states that when God wills an earthquake to occur, He stirs up physical causes. Even if it results from the rock strata's movement, "still this movement and the quake following it occur by Divine command and in accordance with His Wisdom."[56]

Considering humanity to be partly responsible for what is habitually attributed to nature inevitably raises the question of how to distinguish between a natural (which is innate to nature, meant to be beneficial) and

a cultural (human-driven and thus generally retributive) disturbance. This question is closely related to the question of *al-qada' wa al-qadar* (free will and predestination), over which there was a long debate in theological and philosophical circles long before Islam.[57] The Qur'anic verses on this question afford different understandings as to how far humanity is the author of its own acts. Nevertheless, the underlying theme of human accountability is never compromised.

Likewise, the Qur'an explicitly talks of nature's *qadar* and states that it is based on God's grand design. This can be found particularly in the expression *dhalika taqdir al-`Aziz al-`Alim* (that is the decree/ordinance of the Exalted in Might, the All-Knowing), which is mentioned three times in the Qur'an (6:97; 36:38; 41:12) and always in connection with the creation and movements of natural phenomena. These verses reiterate that nature is created and that its movement (including what may result in disturbances to human organization) is predetermined by God. But within this broad divine predetermination, humanity has a considerable degree of freedom to impact the natural environment, tame nature's energies, and turn them aside from their ordinary course.

The difficulty of identifying the natural environment was recognized during the first Islamic conference of environment ministers, held in Jeddah in 2002. After dividing the environment into *natural* (vital) and *civilizational* (human-made), the participants admitted that it is practically impossible to differentiate between both environments, given that humanity has impacted most natural orders.[58] As many natural disasters have been attributed to human-generated environmental pollution, it might be appropriate to investigate within the theology of ecology circle the extent to which humanity exercises a freedom of choice within the broad divine *qadar* in nature. In the light of the newly emerging definition of the natural environment, a discussion of humanity's *qada'* and *qadar* needs to be extended to nature's *qada'* and *qadar* in order to distinguish natural from cultural disasters. That task, however, goes beyond the ambit of this study.

On that account, on a higher frame of reference natural disasters are attributable to God because He created the natural environment with conditions that, when transgressed, may yield unfavourable results. However, on a lower level, humanity is responsible for provoking or abusing this condition. This perspective is grounded in the Islamic view that the creation/design of nature is ultimately good, even when it occasionally leads to a bad result.

## Chaos within the Cosmos?

The previous section considered humans to be responsible for disasters. The question now arises as to why should God, the All-Merciful, allow such disasters, and how nature, within its claimed grandeur, could tolerate such events? This question is commonly referred to as theodicy.

Some philosophers and theologians attempt to justify the existence of such unfavorable phenomena along with the more propitious conditions ingrained in all creations. When explaining the meaning of divine providence and how malevolent and benevolent phenomena can exist in God's decree, Ibn Sina (Avicenna) says that virtue is the basis, essential to all things, while vice is accidental. Yet without the latter's possibility, the former would not have remained as it is. For instance, if fire lacks the power or potential to burn an aristocrat's cloth (which deserves burning), its utility would not have been generally beneficial. Thus, a virtuous thing will remain so as long as it can produce a vice.[59] God is the ultimate creator of everything. Goodness emanated from His creation by essence; evil is always relative and adhered to His creation by accident. Nevertheless, this creation/design is all good and in accordance with the divine will.[60]

Addressing this question when dealing with the doctrine of *al-qada' wa al-qadar* as related to the physical world, Ibn al-Qayyim divides potential existents into six categories: pure good, pure evil, predominantly good but with some evil, predominantly evil but with some good, good and evil in the same proportion, and no good or evil at all. Four of these categories have no actual existence. Pure evil does not exist, because it is, in essence, "pure non-existence" (*al-`adam al-mahd*). That which has no good or evil is vain and thus unworthy of existence. Still more despicable is that which is predominantly evil.[61] Thus, anything that exists is either pure good or predominantly good. The former refers to God, the Absolute Existent from whom all good derives; the latter refers to other existents in the material world (*al-`alam al-sufli*), such as the sun, wind, rain, snow, heat, and cold. The benefits that these elements generate far outweigh their harm; added to this, they are substantial (*dhati*) and universal (*kulli*), while their harm is accidental (*`ardi*) and relative (*nisbi, idafi*). It follows that whatever exists, including monstrous beasts, is not evil by essence (*al-dhat*) but by accident (*al-`ard*), although each creation's niche and merits may not be observable to humanity at all times. But "to deactivate these elements in creation, in order to avert their relative, accidental evil, is tantamount to a greater evil, namely, the loss of many goods that are substantially attached to them."[62]

Following the same line of reasoning, Nursi explains that God assigns to each element in creation the capacity to produce many favorable effects and a few unfavorable ones whenever its causes are activated. If an unfavorable effect is not allowed to take place when its cause is agitated, the many favorable effects will also be denied even when their cause is stirred. However, "leaving many instances of good undone to avoid a single evil is extremely disapproved [of] and contrary to wisdom, contrary to reality and a fault."[63]

It must be added that while God has permitted the *possibility* of disaster to occur, this very possibility makes His creation more meaningful and life more rewarding. As Holmes Rolston reminds us, "an environment entirely hostile would slay us; life could never have appeared within it. An environment entirely irenic would stagnate us; advanced life, including human life, could never have appeared there either."[64] Between both extremes lies creation's grandeur, as far as life in this world is concerned. Imagine an ideal computer operating system, each part of which has been perfected. To maintain its supreme design beyond space and time and secure it from possible hacking or cracking, it has been programmed with impenetrable codes. Since it is so perfect, nothing can be added, deleted modified, or even customized, lest one corrupt its files and codes or defame its grandeur.

The question now is: Could such an operating system really be perfect? Obviously, the answer is "no," particularly according to an inquisitive and inventive mind. The same thing applies to nature. Had it been made rigid and impenetrable and its laws mysterious, it would not have been so grand. What makes the universe great is not the rigidity in its good nature, but that its system is transparent and knowable. This makes the design malleable, if only at the micro level. However, humanity has often chosen to manipulate nature for the worse.

More appropriate to our discussion is to relate it again to violations of the moral law. The universe, being malleable, is based on cosmic balance. Whenever this balance is disturbed or disrupted, its effect, with God's permission, occurs. Whenever the system is manipulated for the worse, repercussions will follow. As Nursi observes, humanity's infringement on the rights of numerous creatures needs to be reprimanded by letting the detrimental effects of their crimes (cause) take their due course.[65] The rationale is to instill and preserve the Creator's consciousness in humanity. Thus, natural disasters can be seen as a means to *discipline* errant individuals and nations (4:147; 6:42-43; 7:94-96) and as examples to succeeding generations (2:66; 43:56).[66]

However, while God allows disasters to occur, He, out of His mercy, still forgives much and thus lets us taste only a part of the effects of our misdeeds. We often attribute such forgiveness to nature's *resilience*. A good example is the 2005 haze of smoke triggered by forest fires in Sumatra, Indonesia. Its effect extended to, and was perhaps even worse in, the neighboring Malaysian states. Haze affects the respiratory, circulatory, and olfactory systems and causes such medical conditions as asthma. The Air Pollutant Index exceeded the hazardous mark of 500 in Kuala Selangor (531) and Port Klang (529), and also reached dangerous levels in Putrajaya (364) and Kuala Lumpur (321). Declaring a state of emergency, the government closed schools and universities, offices and factories, and advised people to stay indoors or wear masks outside.[67] A few days later, the wind first cleared the air and, later, rain cleaned the remaining smoky air. In this situation, God let us taste some pains of this human-driven transborder air pollution for few days so that we might learn to care for our environment and cooperate in our "global village" world. Yet He forgives much through the divinely inspired resilience of nature. The following Qur'anic verses illustrate the point:

> Mischief has appeared on land and sea because of (the evil) that the hands of people have wrought, that He may make them taste a part of what they have done in order that they may turn back (from evil). (30:41)

> Whatever misfortune happens to you, it is because on the things your hands have wrought, and (yet) He pardons most (of your faults). (42:30)

> If Allah were to punish people according to what they deserve, He would not leave on (Earth's) surface a single living creature. But He gives them respite for a stated term. When their term expires, verily Allah has in His sight all His servants. (Qur'an 35:45)

After all, no matter how fine-tuned and habitable the world is, it remains impermanent. In Islam, this worldly life is a transitory stage leading to the *akhirah* (the Hereafter). The fact that a natural disaster could stretch across borders and even continents within a few hours indicates that a global, transcontinental eschatological disaster with a far-reaching impact could happen. The NASA Ames Research Center affirms such a possibility as a result of Earth being hit by a Near-Earth-Object (small objects in the solar system, such as asteroids and short-period comets, with orbits that regularly bring them close to Earth). It predicts that one of those celestial bodies could strike our planet someday, but that statistically the chances are very small. It has been calculated that, "on average, one of these collides with the Earth

once or twice per million years, producing a global catastrophe that would kill a substantial (but unknown) fraction of the Earth's human population." None of the asteroids or comets known so far is on a collision course with Earth, the center assures us, "but we have no way of predicting the next impact from an unknown object."[68]

## Toward Sustainable Development

Does this perspective necessarily discourage development? According to William Rees, preserving the biodiversity and ecosystems necessary for sustainability and growth-oriented economic development is a contradiction in terms, locked in an unavoidable conflict, because humans beings are macro-consumers of energy and materials of nature. Even when they produce, they do so only by dissipating a larger quantity of available energy and material first produced by nature. Thus, according to him, continuous economic growth will ultimately generate an ecological crisis.[69] Others call for more technological advancement to understand nature and overpower its forces. According to them, technology can solve whatever problem it generates. As Daniel Botkin puts it, "having altered nature with our technology, we must depend on technology to see us through to solutions."[70]

As contrasted with the technological antagonists and protagonists, Islam recommends development in both the moral (social and spiritual) and the material-natural dimensions by promoting competition in doing *khayrat* (goodness) and forbidding the spread of *fasad* (mischief) on Earth: "So strive as in a race in all virtues" (5:48) and "Do no mischief on Earth after it has been set in order" (7:56). Realizing and observing these moral laws within the ever-changing political, economic, and social situations contributes to moral development. As God's vicegerent, humanity must make good use of what has been entrusted to it. Thus, exploring the natural world to make good use of its resources, without jeopardizing the ecosystem, constitutes natural development.

Islam's attitude toward the environment is not only to protect it from degradation, but also to promote its development. Zine Eddine Ghonaimi observes that populating the planet and exploiting its resources in the right way are Islamic imperatives.[71] In the title of his *Ri`ayat al-Bi'ah*, Yusuf al-Qaradawi consciously prefers *ri`ayah* to *himayah*, which is commonly used in Islamic environmental ethics, on the ground that *himayah* requires protecting the environment from any degradation, whereas *ri`ayah* requires protecting it from harm and promoting its development.[72] However, such

exploration or development must not be an end in itself, but rather serve as a means to facilitate the realization of the fundamental/universal values enclosed within the moral law in the course of human servantship to God.

In Islamic jurisprudence, the concept of *ihya' al-mawat* (land reclamation) provides an incentive to invest in sustainable land use for one's welfare and that of one's posterity. Based on this system, any person who brings life to unowned land via cultivation or reclamation acquires it as his/her private property. However, this concept forbids any development of lands that are vulnerable to natural hazards,[73] for an Islamic legal maxim states that fending off harm takes priority over acquiring benefit. It is also unacceptable for any generation to exploit and deplete Earth's resources for its own benefit and against the benefit of future generations.[74]

Contemporary environmental ethics is showing an increased interest in ecological discourse from the perspectives of world religions.[75] In such a discourse, the need to reorient modern science and current development trends to advance a religiously inspired philosophy of science and technology has been emphasized. As Nasr puts it, "man cannot save the natural environment except by re-discovering the nexus between the Spirit and nature and becoming once again aware of the sacred quality of the works of the Supreme Artisan."[76] Such science and discourse could provide a platform in which the interpretative praxis outlined in this study could be appropriated.

## Conclusion

Any framework that takes account of non-human beings is not necessarily inhumane or inhuman. Such a framework has provided a wide-angle lens through which the phenomenon of natural disturbances might not be objectively preposterous for all beings. The meaning of the whole has to be derived from its individual parts, and an individual part has to be understood in relation to the comprehensive whole of which it is a part. On that account, humanity has been accorded a special place in the cosmos, but only within the parameters of the divinely sustained chain of beings.

This study reveals that when these natural disasters are natural, they are not necessarily disastrous to all beings, but only to vulnerable communities; when they are disastrous, they are traceable to human actions. Therefore, to ascribe disasters to primal nature is an oxymoron and a constrained vision of responsibility that contradicts the Islamic worldview of the physical world as being a better place to live, if only temporarily. In contrast, not attributing disaster to nature denies that this phenomenon could be attributable to nature's inexorable laws.

Many recent studies have recognized the human hand in the environmental degradation that culminates in disasters. Disaster sociologists, economists, environmentalists, and ecologists have attributed natural disasters largely to the inappropriate human exploitation of nature and its resources. My conclusion on human responsibility toward nature concurs with theirs. While these specialists speak in the terms of their respective disciplines, this study speaks in ethico-religious terms.

As a result of different interpretations, different solutions have been proffered. Some rely on technological protective solutions, others on technological abstinence. This study, grounded in a completely different causal framework, attributes the real "quake-proof" to observing the moral law and the responsible exploitation of natural resources.

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75.  See, for example, a series of edited books published by the Center for the Study of World Religions, Harvard Divinity School, such as *Islam and Ecology* (2003), ed. Richard C. Foltz et al.; *Buddhism and Ecology* (1997), ed. Mary Evelyn Tucker et al.; *Christianity and Ecology* (2000), ed. Dieter T. Hessel et al.; *Con-fucianism and Ecology* (1998), ed. Mary Evelyn Tuckeret al.; *Daoism and Ecology* (2001), ed. N. J. Girardot et al.; *Hinduism and Ecology* (2000), ed. Christopher Key Chapple et al.; and *Indigenous Traditions and Ecology* (2001), ed. John A. Grim.

76.  Seyyed Hossein Nasr, "Islam and the Environmental Crisis," 50-51.