

The Meaning of Zero (零)

Where there is a proton, there is an electron; where there is matter, there is antimatter, and the two cancel to yield zero. An atom consists of a nucleus of protons and neutrons, orbited by electrons. Neutrons are uncharged; protons and electrons carry equal-magnitude positive and negative charges, and, within a neutral atom, the number of protons equals the number of electrons. Thus, when the positive and negative charges in a single atom are balanced, the net charge is zero. Likewise, for every particle of matter there exists a corresponding antiparticle; when matter and antimatter meet, they cancel one another, leaving a state in which nothing remains.

On this, Stephen Hawking wrote: "All the laws of nature that describe the continuous world—such as our will—contain a concept of energy that is conserved, that is, does not change with time (the law of conservation of energy). The energy of empty space has a constant value, independent of time or place. We can calculate the energy of a particular region by subtracting from it the energy of an equally sized region of empty space. We may set the vacuum energy equal to the constant 0. The energy of a body is a positive number, greater than zero. If the total energy of the universe must always be zero and it takes energy to make bodies, how can the whole universe be created from nothing? The law of gravity is the answer. Gravity is an attractive force, so gravitational energy is a negative number, less than zero. In conclusion, empty space is stable, and while bodies such as stars or black holes cannot simply appear from nothing, the whole universe can." 1)

Classical theologians, Greek philosophers, and many others have argued that life on Earth is unfair and therefore a judgment in the afterlife is desirable. "Traditionally, Judaism has held that earthly life does not constitute the whole of our human

experience, and that there is life after death. 'The World to Come' will appear as the fuller or truer world in which the answer to why bad things happen to good people—and the reasons hidden behind life and the world—will be revealed." 2)

Yet, if every individual were to look back coolly and objectively at life on the very verge of the grave—assigning a score to each experience, adding and subtracting—one would find the sum to be zero. Just as every entity coexists with its counterpart and annihilates to zero when they meet, so too the crests and troughs of life's waves—the heights of joy and depths of sorrow, the plenty and the want—correspond and cancel: their sum is zero. The magnitudes differ, but the property that their sum returns to zero does not. Because the components of all beings are vibrations, this arithmetic applies to every being.

If we assume that earthly injustices will be offset by reward or punishment after death, we will accept the world's unfairness as fate and cease striving to set things right. Then earthly injustice and inequality cannot improve. The message becomes: accept every unreasonable system without complaint. To project the afterlife in this way—urge people to endure present injustice for the sake of postmortem compensation—has been a chronic ill of religions grounded in the Hebrew Bible. Jesus and the Buddha sought to remedy such unreasonable ills and to teach the making, here and now, of a world in which all beings are treated fairly and equitably.

On *Nosome* (無有), Zhuangzi (ca. 369?–286 BCE) long ago wrote: "The gate of Heaven is *wu-you*, the myriad things arise from *wu-you*. Being cannot be being on its own; it must arise from *wu-you*. And in *wu-you* there is only *wu-you*, the sage abides therein." 3) The opening clauses can be rendered, "Heaven's gate is *Nosome*; the ten thousand things arise from *Nosome*." Here *Nosome* names the state that is "nothing yet something, something yet nothing."

This accords with the Mahāyāna formula, "Form is not different from emptiness; emptiness is not different from form. Form *is* emptiness, and emptiness *is* form." *Emptiness* here points to the most primordial state of form.

It is striking that *Nosome* denotes the coexistence of not-being and being. Everything always exists together with its corresponding opposite. Darkness exists because there is light; height is perceived as such because there is depth; cold is known because there is heat. Gain has meaning because there is loss; we lose precisely because we have. Good (善) is recognized because evil (惡) exists; only those who have tasted misfortune can truly savor happiness.

Likewise, though one may *feel* that one life was happier or more miserable than another, consideration of the physical nature of being shows otherwise.

Being and non-being combine to yield the existence of all things. The first state of *being* was a singularity—so exceedingly small as to be virtually indistinguishable from *not-being*, smaller than an atom. It is a state where being and non-being cancel, a state equivalent to zero. From here all things derive; and all derived things carry their opposites with them, so that when the pair recombines, it returns to the original zero. Proton and electron, light and darkness, youth and age, summer and winter—every entity meets its counterpart and resolves to the nothing state, to zero. Through this process, the myriad things of the cosmos arise, vanish, and reappear in cycles.

Socrates, too, grasped this truth and reasoned as follows: "If we apply the question (that all living things come from death) not only to human beings but to animals

in general, to plants, and to everything that reproduces [what is transmitted from one generation to the next], the proof becomes easier. Everything has its corresponding opposite and is generated from its opposite. I mean opposites such as good and bad, just and unjust—there are many others that can be generated from their opposites. I wish to show that this universally applies to all opposites. For example, becoming greater must come after becoming smaller, and what is smaller must once have been greater. Weakness comes from strength; speed from slowness; deterioration from improvement; becoming more just from becoming more unjust. This universal application to all opposites convinces us that everything comes to be from its opposite.” 4)

Consider the characters *wigi* (危機, “crisis”) and *tongkwae* (痛快, “exhilaration”). Danger and opportunity coexist; the greater the danger, the greater the opportunity. Pain is followed by pleasure. This resonates with the idea that additions and subtractions sum to zero. In enterprise, only by braving great risk can one reap great returns; the deeper the pain one endures, the greater the outcome—and the greater the exhilaration.

Where there is morning, there is evening; where day, there night; summer, winter; male, female; birth, death; every bulge is matched by a corresponding hollow. All things exist alongside their contraries. Where there is happiness, there is unhappiness; where joy, sorrow; where gain, loss; where good, evil; where a beginning, an end. One who has not tasted one side cannot understand the other, and the intensity of one side will be matched by the intensity of the other. Without sinking into deep despair, one cannot savor great joy. One who has never possessed great wealth cannot incur a staggering debt.

In short, just as yin and yang unite and return to zero, nature balances every

addition and subtraction to produce zero. Thus, looking back at life in one's final moment, one finds that the sum of life's pluses and minuses is zero. If anyone thinks they can carry away even a speck more than this—if anyone claims to have lived so—then they have not understood nature's law. We obtain, enjoy, and depart in proportion to our effort. If, in the short term, one has received much more than one has labored for, then in the course of living one will experience corresponding loss. It is wise not to imagine that a long or short season will last forever.

What you achieve is only the result of your own effort and sacrifice. If you desire an outcome, you must invest time and money accordingly. What is built without such investment collapses like a sandcastle or dissolves like a daydream. Yet for those who strive, results commensurate with that striving arrive, even if they never set out to pursue wealth or fame. Bear this in mind; abandon the hope of windfalls; win results through your own effort and practice. As a farmer sows and sweats steadily toward harvest, so should we labor, each according to our ability, to reap the fruits we hope for.

Some, in speaking of happiness and unhappiness, wish to feel happy all the time. But without experiencing the depth of the trough, one cannot speak of the height of the crest. A person who has never met the limits of ability, the sting of challenge and failure, the pain of illness or loss—even if great joy or happiness comes—cannot taste its true flavor. Each of us merely sets, or chooses, the amplitude of the wavelength we wish to ride.

Sources

1. *The Grand Design*, Stephen Hawking, Bantam Press, 2010: 179–180
2. *The Talmud*, A. Parry, Alpha Books, 2004: 258

3. *Zhuangzi*, trans. & notes by Andong-rim, Hyeonamsa, 1993: 578–579
4. *Euthyphro, Apology, Crito, Phaedo*, Plato, Prometheus Books, Amherst, NY, 1988: 84