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# Road to Peace

Chapter 2.  
A Reason for All Creation  
Living in Harmony



**HWPL**  
Heavenly Culture, World Peace,  
Restoration of Light

# Chapter 2

## A Reason for All Creation Living in Harmony

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Section 1 Connectivity

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Section 2 Value

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Section 3 Role, duty

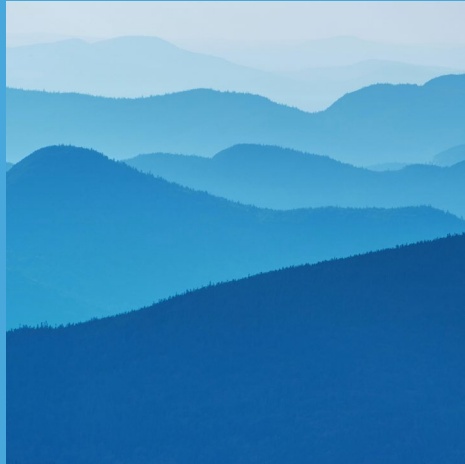
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## Overview

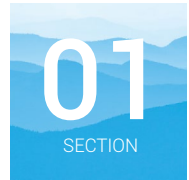
Nature, which achieves harmony and balance based on unity and diversity, is the standard of peace that humankind desires. Therefore, if we find a principle that harmonizes nature and we apply it to human society, we can come closer to peace. The first reason nature lives in harmony is that all things are connected. All creation is organically connected, interdependent and harmonious. The second reason is that all creation has its own intrinsic value. Lastly, all creation is faithful to their respective roles. Like a machine with all its parts functioning smoothly, all ecosystem components are faithful to their respective roles and achieve harmony and balance. Just like nature, if we recognize that all countries and members of society in the world are interdependent, respect each other's values, and fulfill our respective roles and duties, we can also establish peace in human society.



*Our ancient experience confirms at every point that everything is  
linked together, everything is inseparable.*

—

The 14th Dalai Lama, Tenzin Gacho (Tibetan national leader, 1935–present)



## Section 1

# Connectivity

# Formation of interdependent relationships and peace in human society

All creation is harmonious because they are connected and have an influence on each other. Just as a beautiful picture is completed when the scattered puzzle pieces are put together, all creation is organically connected to form a harmonious and balanced earth ecosystem. In addition, the interdependence of the ecosystem is the source of sustainability in nature. Likewise, human society is expanding interdependent relationships through globalization and global governance.

## 1. Creation that are connected and have influenced on each other

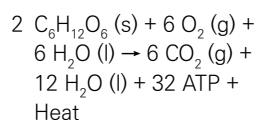
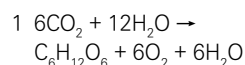
### 1) Earth where all things are connected

Earth's matter and energy circulate. The circulation of matter and energy is possible because they are connected even though they are not visible to the eyes. First, let us

learn about circulation through the process of generating oxygen in the atmosphere. As a result of erosion by rain or wind, substances contained in rocks and soil flow into rivers. Diatoms, phytoplankton living in the sea, reproduce by receiving nutrients from rivers. Diatoms produce about 20-50% of the total oxygen in the Earth's atmosphere through photosynthesis.<sup>1)</sup> Oxygen released by diatoms is used again for respiration by living things and is released as carbon dioxide and water.<sup>2)</sup> The carbon dioxide and water generated here are used again as materials for the photosynthesis of land plants. The oxygen generated from photosynthesis fills the remaining amount of oxygen in the atmosphere. In addition, the water released during photosynthesis creates clouds that bring rain, causing further erosion of rocks and soil. This endless cycle does not deplete oxygen in the atmosphere.

Numerous plants and animals living in the Amazon jungle consume vast amounts of nutrients. Where and how are these nutrients constantly supplied? Dust winds from Africa are the largest source of nutrients, and massive dust winds from the African desert cross the Atlantic Ocean to reach the Amazon Basin. They are excellent fertilizers containing various elements, providing sufficient nutrients for life in the Amazon basin. The vast amounts of material expelled from the Amazon rainforest then flow back into the Atlantic Ocean through the Amazon River. Various substances introduced into the Atlantic Ocean are used as nutrients for marine life, and the Atlantic ecosystem eventually affects Africa.

Rain falling on dry inland areas is also evidence that the ecosystem is connected. How do clouds form and rain in dry inland areas? Clouds form mainly over the sea and move to land. Thus, while coastal areas are cloudy and rainy, inland



areas are too far for clouds to reach and too dry for clouds to form. Nevertheless, it still rains in the inland regions of the continent because the wind carries the water vapor emitted by plants on the shore to create an invisible river in the sky. The atmospheric rivers composed of water vapor form clouds over the inland areas and causes rain to fall. Rain that falls on inland areas also creates forests, and the water vapor from the area will rain down on the deeper inland areas. Therefore, the more forests along the coast, the more it rains, even on the deep inland. However, if there are no forests along the coast, inland areas are highly likely to become deserted. Rain that falls on inland regions becomes rivers and groundwater and flows into the sea again.

## 2) Ecosystem Inter-dependence

In biology, a group of living organisms and their physical environment is called an ecosystem. An ecosystem is a concept created based on the interdependence between organisms. In general, a food chain connects the interdependent relationship of animals and plants, and it is an indicator of the health of an ecosystem. An ecosystem with a simple food chain is highly likely to collapse even with a slight change. Conversely, an ecosystem with a complex food chain can be viewed as a healthy ecosystem with diverse biological species, and the equilibrium is not easily broken. In other words, the more simple the interdependent relationship, the more unstable the crisis coping ability, and the more complex, the better and more stable the ability to cope with the crisis.

In addition to the food chain, there are cases in which interactions occur in different forms, such as *Nepenthes lowii* and tree shrews. The region around Mt. Mulu in Gunung Mulu

National Park, Malaysia, registered as a UNESCO World Heritage Site, is a limestone area, so only small shrubs and moss inhabit due to the lack of nutrients in the soil. In such a barren environment, some plants survive with the help of animals. A plant called *Nepenthes Lowii* gets its nutrients from the feces of tree shrews. This toilet-shaped plant attracts tree shrews with its sweet white secretions, which contain substances that induce excretion of the tree shrews. The tree shrews, lured by *Nepenthes Lowii*'s temptation, eat the white substance and immediately defecates on the toilet-shaped leaf. *Nepenthes lowii* then digests the feces of the tree shrews and absorbs the nutrients. In this way, not only do animals obtain nutrients from plants, but also plants receive necessary nutrients from animals.



Figure 1-1  
*Nepenthes Lowii*

Interdependence can be found between entities and also within a single entity. For example, the human eye is connected to the brain and can distinguish about ten million colors. The eye is broadly divided into the anterior and posterior segments. The anterior segment mainly receives light, and the posterior segment receives information from light and transmits it to the brain. Then, the brain accumulates the received visual information to distinguish colors and recognize objects. Occasionally, blind people who have undergone vision restoration surgery cannot recognize objects even though they can see because the brain of the visually impaired does not have previously accumulated visual information. These examples show how the brain interacts with various sensory organs, including the eye.

### 3) Interdependence in human society

Humans have been living in groups for a long time.



Organizations such as family, society, and state are based on interdependent relationships. In particular, since modern society is highly fragmented, self-sufficiency is practically impossible. From food, clothing, and housing to electronic products, the internet, and various services that an individual needs to survive, they purchase and use everything others have produced. This fact shows how important interdependent relationships are in modern society.

Globalization is a process in which the whole world lives together as exchanges between countries increase in various fields such as politics, economy, and culture. The scope of individual activities has expanded beyond the country to the global village, and interdependent relations between countries have been created as human and material exchanges have increased. The interdependent relationship between countries also influences the spread of peace. As Montesquieu writes in *De l'esprit des lois*, "The natural effect of commerce is to lead to peace. Two nations that trade with each other become reciprocally dependent." Furthermore, in Azar gat's *The Causes of War and the Spread of Peace*, he claims that the sharing culture that spreads rapidly through the internet and social media reduces differences in world views and values among societies worldwide, leading us to see each other with more familiarity.<sup>3)</sup> Like this, the interdependence between countries can result in mutual prosperity and peace.

Let us take a look at Global Governance that emerged during the process of globalization. Global governance is typically defined as "cooperative management of cooperative governance on a global scale." In the early 1990s, with the end of the Cold War and structural changes in the international situation such as rapid globalization, governments were no

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3 Azar gat, *The Causes of War and The Spread of Peace*, P323

longer limited to national governments as actors for solving various problems on a global scale, such as poverty and hunger, the environment, human rights, refugees, and nuclear weapons. Accordingly, a new method of engaging various stakeholders such as international organizations, corporations, and NGOs in the government policy-making process has been introduced, called global governance. Global governance has developed into security, economy, environment, human rights, and peace governance. For example, in the environmental field, the greenhouse gas problem, which has been receiving serious attention in the 21st century, is a problem that both countries and individuals must solve. Governments worldwide have created and implemented low-carbon, eco-friendly policies to reduce greenhouse gas emissions. Therefore, each company is reducing its dependence on traditional fossil fuels and is developing new technologies using clean energy such as solar heat, wind power, and hydrogen. In addition, NGOs are working together by implementing various campaigns to raise awareness of climate change caused by greenhouse gases and monitoring whether the government's policies and implementation processes are transparent. These closely interconnected organic systems help solve problems more effectively.

## 2. Influence

All living things in the ecosystem are influenced by one another because they are all connected. The strength that the effect or action of one phenomenon exerts on another is called “influence.” Another phenomenon is called the “ripple effect.”

Currently, the entity with the most influence is humans. The ripple effect is another phenomenon that propagates its force outwards like a chain to the surroundings. Currently, the most influential beings on Earth are humans. We need to sincerely analyze the ripple effect our current work will have in the future. If there have been bad decisions, we must quickly reverse them. Furthermore, we must make peaceful choices for the co-existence of nature and humans.

### 1) Influence

A person's thoughts can influence the body. In 2016, the BBC conducted an experiment with seven participants to examine the impact of thinking exercises.<sup>4)</sup> Some of the participants were unable to exercise for health reasons. First, they measured the strength of the muscles by measuring how hard they could push the exercise equipment with their legs. In addition, the size and volume of the muscles were measured using ultrasound, and the amount of muscle usage was measured through electrical stimulation. Furthermore, the volunteers only imagined pushing the exercise equipment for about 15 minutes five times a week without physical exercise for a month. Then, they were instructed to imagine contracting their muscles 50 times. When they measured the participants' muscles one month later, their strength improved by an average of 8%, and one woman saw an astounding 33% improvement in muscle strength. Simply by imagining, a change in the muscle occurred. It has been confirmed through this experiment that human thoughts can influence the body.

Global warming affects the survival of various living things and humans. Of all the causes of global warming, 90% is due

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4 <https://www.bbc.co.uk/programmes/articles/1wzlc1KxyjMlk6ZMB0sQVhG/is-it-possible-to-get-stronger-just-by-thinking-about-exercise>

to carbon dioxide. As greenhouse gas emissions, including carbon dioxide, have increased, the earth's average temperature has also risen. According to the 2008 report, the International Energy Agency (IEA) claimed that the concentration of carbon dioxide in the atmosphere has exceeded 385 ppm and is increasing by 2 ppm every year and gave a warning that by 2050, it could reach 550 ppm.<sup>5)</sup> Experts predict that if the temperature exceeds 450 ppm, the global average temperature will rise by more than 2 degrees Celsius, leading to the extinction of many living things. The 2019 *Hindu Kush Himalaya Assessment* report warned that two-thirds of the Himalayan glaciers could disappear by 2100 due to global warming.<sup>6)</sup> In addition, if all the glaciers in the Himalayas, called the water tower of Asia, melt by 2060, the river flow will increase, and flooding will occur more frequently. After 2060, it is predicted that the flow rate will decrease, causing drought and lack of drinking water, and hydroelectric power generation will no longer be possible, causing disruptions in energy production. The Himalayan Rivers are the primary water source for about 2 billion people in India, Pakistan, Bangladesh, Afghanistan, and China.

Due to global warming, the island country of Tuvalu is in danger of sinking beneath the sea. The rising sea level and rapid changes in water temperature from global warming are causing the corals to undergo "coral bleaching," in which they turn white and die. Tuvalu is the world's fourth-smallest country, with an area of 260,000 km<sup>2</sup> and a population of about 11,000. The average elevation is 2 m, and the highest point is 5 m. Due to its low elevation, most of it will be submerged even if the sea level rises only by 50 cm from today. Experts predict that at the current rate, Tuvalu will be

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5 International Energy Agency, Energy Technology Perspectives (2008), p51–52

6 Wester, P., Mishra, A., Mukherji, A., Shrestha, A.B., The Hindu Kush Himalaya Assessment Mountains, Climate Change, Sustainability and People (2019)

submerged by 2060. Furthermore, 70% of the coral sand <sup>7)</sup> is produced by fish who eat and excrete coral. However, the coral sand is gradually decreasing as corals for fish to consume are disappearing due to coral bleaching. The decrease in coral sand indicates that the island also disappears together. People who have lost their homes due to environmental changes will become environmental refugees and face another challenge.

Due to accelerating global warming, Siberia, one of the world's coldest regions, reached 38 degrees Celsius in June 2020. As permafrost in Siberia melted due to the high temperatures, a 30,000-year-old virus was also discovered. Ancient viruses and bacteria that have been buried in the ground for tens of thousands of years are being revealed, raising the possibility of new diseases. In addition, the hot and dry weather had dried up the ground and caused large-scale wildfires. CNN reported that the fires in eastern Russia between June and August 2020 emitted approximately 540 megatons of carbon dioxide.<sup>8)</sup> The greenhouse gases emitted in this way threaten the survival of people on the other side of the world.

We examined the influence of thoughts on the body and the effects of warming on the earth. Influence occurs because the natural world is interconnected. My careless behavior can have a significant influence on others. To ensure that the harmony of human society is not disturbed, we must carefully consider the impact of individual and national decisions and actions.

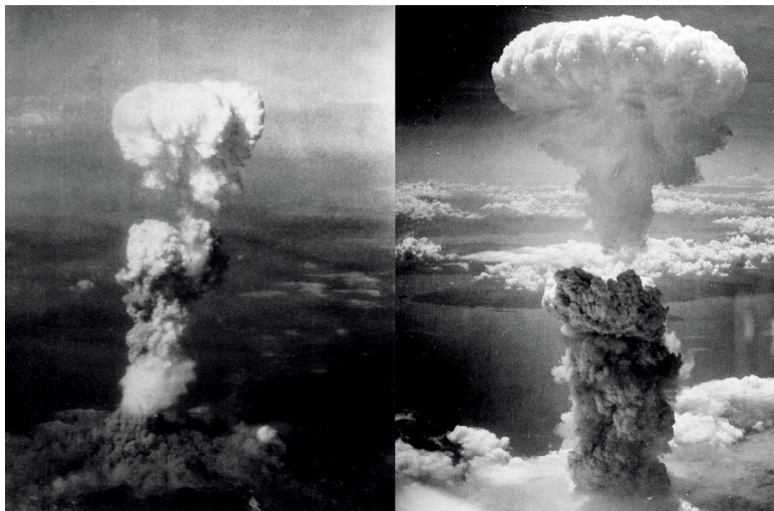
## 2) Ripple effect: the chain of influence

Atomic bombs use a large amount of energy generated by the instantaneous fission nuclear chain reaction of fissile materials such as uranium and plutonium. On July 16, 1945, during

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7 Most of the sand found on coral beaches is coral sand that fish eat coral and excrement.

8 <https://edition.cnn.com/2020/09/03/world/arctic-wildfires-climate-intl/index.html>



**Figure 1-2** Hiroshima (left) Nagasaki (right) Atomic Bomb Mushroom Cloud

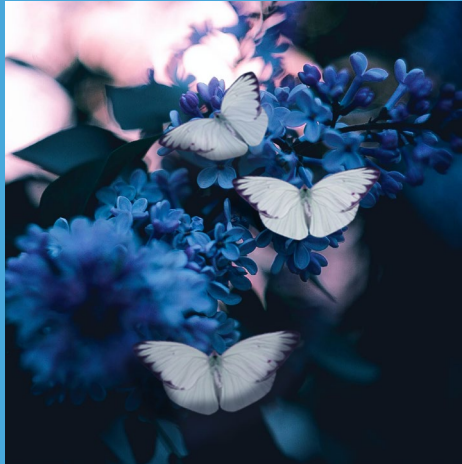
World War II, the United States conducted its first nuclear test in the desert near Alamogordo. Atomic bombs were then dropped on Hiroshima, Japan, on August 6, and Nagasaki on August 9, respectively. These two atomic bombs were the first nuclear bombs to be used against civilians in warfare. During the atomic bombing, the death toll was estimated at 70,000 in Hiroshima and about 40,000 in Nagasaki. However, approximately 200,000 deaths in Hiroshima and 80,000 deaths in Nagasaki were reported when considering additional causes such as radiation exposure and burns. Setsuko Thurlow, a survivor of the atomic bombing of Hiroshima, recalled her experience in her speech at the 2017 Nobel Peace Prize Ceremony.<sup>9)</sup> “Most of my classmates in that building were burned to death alive. ... Flesh and skin hung from their bones. Some with their eyeballs hanging in their hands.” The damage suffered by the atomic bomb is not limited to physical damage caused by radiation and heat rays. The effects of the radiation damage spread throughout life, including loss of labor and lower income due to physical disability, family dissolution,

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<sup>9</sup> <https://www.nobelprize.org/prizes/peace/2017/ican/26041-international-campaign-to-abolish-nuclear-weapons-ican-nobel-lecture-2017/>

missing family members, and fear of the aftereffects of disease and genetic effects. Einstein, who invented the basic principles of nuclear energy, said of this event, “If I had foreseen Hiroshima and Nagasaki, I would have torn up my formula in 1905.” and expressed his regret. In 1905, he would have never imagined that the formula he wrote would have such a terrible ripple effect. Once such an impact has been made, it isn’t easy to reverse the effects, and it takes a long time to recover.

To achieve peace, we must recognize that we are interconnected. If we realize that nature and people, and I and others, are connected, we cannot treat each other carelessly. Furthermore, strengthening interdependent relations for cooperation will be the basis for sustainable development and peace.

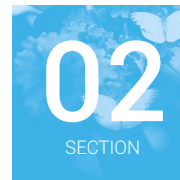


*Nothing in this world is useless in the eyes of God.*

—

Paulo Coelho (Brazilian novelist, 1947–present)





## Section 2

# Value

# Realizing my value and peace

Just as each component is uniquely valuable when we disassemble a machine, all creation lives in harmony because they have their own value of existence. Likewise, when a person discovers and recognizes one's value of existence, one will develop healthy self-esteem and recognize and respect the value of others as well. Peace begins with respecting the values of yourself and others.

## 1. The value of all creation

American astrophysicist Greg Laughlin devised a formula to calculate the worth of planet Earth into a dollar to search for Earth-like planets.<sup>10)</sup> According to the formula based on physical environments such as age, solar mass, size, and temperature, Earth is worth approximately five quadrillion dollars. As a result of calculating the values of other 1,235

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<sup>10</sup> <https://oklo.org/2009/03/15/habitable-planets-more-value-for-your-dollar/>

planets, no planets of the same level of value were found. Earth has an incomparable value to other planets. If one adds the value of life to this, it is impossible to convert it into money.

We do not know the value of the outer core inside the Earth, but the outer core helps living things survive on Earth. Considering the amount of radiation emitted by the sun, life cannot exist on the earth's surface. The sun emits heat and light as well as solar flares. A solar flare is an explosion that occurs on the sun's surface, releasing powerful energy and radiation. The power of a flare is equivalent to billions of Hiroshima atomic bombs, and one of the reasons why life cannot exist on Mars is because of flares. Then, how can life exist on Earth, which is closer to the sun than Mars? The reason is that Earth's outer core creates a powerful shield called a magnetic field. The outer core, which has less pressure than the Earth's inner core, is a fluid composed of iron and nickel. The liquid outer core is in a constant convection state due to the difference in internal temperature. The outer core generates the Earth's magnetic field, just like a generator produces electricity in this process. The magnetic field extends up to 640,000 km outward into space, enveloping the entire Earth and blocking radiation emitted by the flare. Due to this, life can survive on Earth. The secret of the aurora, seen mainly in the polar regions, is also here. When the Earth's magnetic field meets radiation, it creates an aurora known as the celestial curtain. In this way, even when we can't see it with our eyes and do not recognize its value, the Earth's magnetic field created by the outer core protects life so that it can survive.

Next, let's look at the value of viruses, which we commonly consider harmful. Recently, medical experts have been

warning that there will come a time when no antibiotics will be effective due to a new type of bacteria called “Superbug” that is resistant to antibiotics. Adaptive Phage Therapeutics, a company that researches countermeasures against superbugs, is researching to find the clue to this problem in viruses. Although most think that both viruses and bacteria attack humans, not all do. Rather, viruses and bacteria have been fighting one another for billions of years. Bacteriophages are viruses that use bacteria as hosts and can eliminate life-threatening superbugs. In fact, bacteriophages are the natural enemies that kill most bacteria on the planet. It is very challenging to develop new antibiotics against bacteria that are resistant to existing antibiotics. However, it is easier to identify and match bacteriophages suitable for antibiotic-resistant bacteria. Among the viruses that we only consider to be harmful, they are being used to treat superbugs and save human lives.

Coral reefs, commonly found in the sea, play a vital role in maintaining the marine ecosystem. To humans, coral reefs are easily perceived only as a tourist resource. However, the coral reef is called the lungs of the sea and has value beyond tourism resources. According to a report published in 2006 by the United Nations Conference on Human Environment (UNEP),<sup>11</sup> coral reefs provide a buffer to reduce shoreline erosion and are a major habitat for fish. Coral reefs can absorb about 90% of the energy from wind-generated waves, thus protecting the coast from erosion and damage. In monetary terms, the value of coral reefs is estimated to be between \$100,000 and \$600,000 per kilometer. A hotel in West Lombok, Indonesia, spent an average of \$125,000 annually over seven years to repair erosion along the 250-meter shore caused by coral reef

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11 Wells, S., Ravilious, C., Corcoran, E., UNEP-WCMC, In the front line. Shoreline protection and other ecosystem services from mangroves and coral reefs. UNEP-WCMC Biodiversity Series 24 (2006)

damage. The coral reef also provides habitat and shelter for up to 25% of marine life. The seas of northeastern Australia are ecologically desert-like, as there are no large rivers that feed land nutrients nearby. However, there are coral reefs that provide nutrients through photosynthesis, which can support thousands of species of marine life. Governments recognize the value and economics of coral and are putting in the effort to protect and restore the coral reefs.

Tardigrades, known as water bears because they look like bears swimming in the water, receive constant attention from scientists. The tardigrades are approximately 1 mm long and live mainly in the water. However, when the water supply is cut off, they stop all life activities and go into a dormant state of dehydration. Dried-out tardigrades do not die when cooled to  $-272^{\circ}\text{C}$  nor when heated to  $151^{\circ}\text{C}$ . Tardigrades have survived all five mass extinctions on Earth. Even if exposed to radiation 1,000 times stronger than the amount of radiation lethal to living things, tardigrades would not die. In a 2007 experiment,<sup>12)</sup> when tardigrade animals were left exposed to

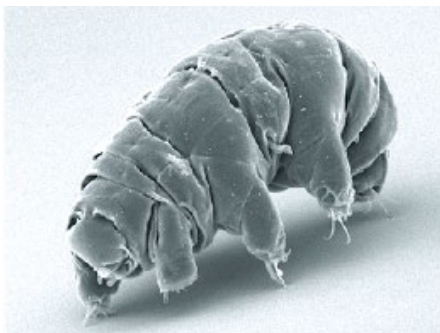


Figure 2-1 Water bear

radiation, they not only survived but also reproduced. Until now, tardigrades were regarded as insignificant creatures, but today they are being actively studied as their value is

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12 K. IngemarJönsson, Tardigrades survive exposure to space in low Earth orbit, *Current Biology*, Volume 18, Issue 17, 9 September 2008, P729-731

recognized as beings that will tell humankind the secret of survival.

Life makes Earth the most beautiful planet, and it is the most precious value for humanity. What would happen to Earth without living things? Currently, the average temperature of the earth is approximately 15°C. However, if there were no living things, the earth's average temperature would rise to 290°C. Plants absorb carbon dioxide and regulate the absorption of solar energy from the Earth's surface, which helps maintain a temperature suitable for living things. The most important thing for a person is life. The heart beats about 100,000 times in one day to sustain life. The blood travels approximately 270 million km to deliver oxygen and nutrients throughout the body, similar to the distance between Earth and the sun. About 37 trillion cells are constantly at work. Such amazing things happen within our bodies to sustain a person's life. A person is given life only once, and what has died cannot be brought back to life. Therefore, life is the most precious thing that cannot be compared to anything else.

## 2. Realizing my value and peace

### 1) Realizing my value

Realizing and acknowledging my value is the first step to peace. There was once a distracted child who his teacher judged because he could not concentrate and did not succeed no matter what he did. The child was eventually diagnosed with attention deficit hyperactivity disorder (ADHD). He started receiving swimming therapy to control his hyperactivity, but he hated water so much that he would scream and throw

his goggles. Although it was difficult for the mother to raise three children alone after the divorce, she did not give up on the child and believed in his potential. Whenever the child was afraid and failed, she encouraged him and gave him confidence. The child began to gain more courage, and as he believed in himself and persevered, he started to display talents he never knew he had. The child could concentrate enough to stop taking medication, and he devoted himself to swimming every day to where he forgot the days of the week. This man is Michael Fred Phelps II, the first Olympic swimmer to have achieved eight gold medals and win a total of 28 medals. He has given courage and confidence to many who have forgotten their worth and felt frustrated. In addition to the outward appearance, a person has an intrinsic value. If a person discovers and develops their inner value, they can overcome their present limitations and advance.

## 2) Self-esteem and respect for others

If I calculate the chance of my existence in this world, I will get a surprising result. First, I need to calculate the probability that a habitable planet will form. Then, it is also necessary to consider the likelihood that life will appear and evolve into intelligent life. Furthermore, I have to calculate the probability that my father and mother will meet and marry and that I will be born out of the number of sperm a man has and the number of eggs a woman has in their lifetime. Then, I have to trace back to my ancestor and calculate the probability of my grandfather and grandmother getting married and having my father. It can be assumed, without calculating, that the probability is close to zero. As such, I am a very precious and unique being. Likewise, regardless of race, skin color, or

religion, everyone is valuable just for their existence.

Self-Esteem is when I recognize my value as it is. Self-esteem is different from narcissism. People who think they deserve special treatment because they are superior have high narcissism but difficult to see that they have high self-esteem. Self-esteem is not the desire to gain dominance over others but to respect others' values as you value yourself. People with healthy self-esteem know how to respect all their strengths and weaknesses and do not easily criticize others. They are also considerate, listen carefully to others' opinions, and strive to mediate conflicts amicably. Therefore, self-esteem is a critical factor in creating harmonious human relationships. Anyone can have healthy self-esteem if they accept their existence as they are and strive to discover their worth.

### 3) Knowing my value is the foundation of peace

As an African woman, suppose you went to study abroad, learned a lot, obtained a master's degree, and returned to your home country with big dreams. However, the situation in your home country is poor. Forests are disappearing due to indiscriminate logging, and people are walking tens of kilometers every day to find firewood. Most women do not even get an opportunity to learn, and it is challenging to develop their abilities due to discrimination against women. However, you can go to another country and live your life to the fullest because you have a degree. What choice would you make?

There is a woman who did not get frustrated and devoted herself to her country in such a situation. She is Wangari Muta Maathai and is the first black woman to receive the Nobel Peace Prize. After contemplating what she could do,

she started the 'Green Belt Movement' in 1977. She taught people how to plant trees and provided a foundation for self-reliance by giving a reward for each well-grown tree. She encouraged people in despair by stating that planting trees gives hope to themselves and their descendants that they and their descendants can start over at any time. By planting trees, people restored their value and self-esteem and realized the importance of protecting nature. However, the Green Belt Movement did not proceed smoothly. Opponents of the Green Belt Movement faced political repression and assassination threats. Nevertheless, despite the opposition, tree planting gradually expanded to neighboring countries. Planting trees continued until Wangari Maathai died in 2011, and over 30 million trees were planted across Kenya, filling the forest.

What makes Wangari Maathai's Green Belt Movement special is that it shows what people who are certain of their worth can do for peace. If Wangari Maathai had thought she could not do anything for her country, she would not have started the Green Belt Movement. However, Wangari Maathai was convinced that she could do something worthwhile for her country. Through planting a tree that began with one person, thousands of Kenyans overcame their despair and found hope. It was also able to lay the foundation for the country's sustainable development and peace. In 2004, the Nobel Peace Committee recognized Wangari Maathai's achievements and awarded her the Nobel Peace Prize.



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memo





*Do your duty and a little more and the future  
will take care of itself.*

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Andrew Carnegie (American businessman, 1835–1919)



## Section 3

# Role, Duty

# The role of human society, fulfillment of duty and peace

All creation is harmonious because they are faithful to their functions. From the atmosphere, sea, and soil to various living animals, plants, and invisible microorganisms, all components of the Earth's ecosystem are in balance and harmony. Nature even has the ability to restore itself when it is out of balance. Human society can also maintain a harmonious relationship without harming others when each individual fulfills their roles and duties. Peace begins with fulfilling one's role and duty within the family, society, and nation.

## 1. Nature faithful to its function

### 1) Ozone layer crisis and restoration

Nature restores itself. The ozone hole is a phenomenon that is observed like a hole due to the depletion of the ozone layer. Ozone holes mainly occur in the polar region, and the

first ozone hole was discovered in Antarctica in 1985 and in the Arctic in 2011. The ozone hole is dangerous because UV-C,<sup>13)</sup> which causes DNA destruction, skin cancer, cataracts, and burns, reaches the earth's surface through the ozone hole. According to the various findings, the compounds that destroy the ozone layer were Freon gas<sup>14)</sup> and nitrogen oxides, which were mainly used as refrigerants. However, ozone holes occur exceptionally in the polar regions because of polar stratospheric clouds. The stratosphere is very dry and rarely forms clouds, but the temperature in the polar stratosphere often descends below  $-78^{\circ}\text{C}$ , where water vapor condenses to form clouds. The chemical reaction between the generated polar stratospheric clouds and the Freon gas component destroys the ozone layer and creates an ozone hole. In 1987, the international society adopted the Montreal Protocol on Substances that Deplete the Ozone Layer, which regulates the production and usage of ozone-depleting substances, including Freon gas. As a result of the cooperation between 197 countries, the emissions of ozone-depleting substances have significantly reduced. Although human efforts can reduce the emission of ozone-depleting substances, they cannot restore the destroyed ozone layer. It is nature's duty to restore the ozone layer. As humans no longer destroyed the ozone layer, nature immediately began to restore the ozone layer. The size of the ozone hole in Antarctica has decreased annually since 2010, and 2020, the ozone hole almost disappeared in all seasons except winter. However, recently, some dangerous news has resurfaced. Some countries violated the Montreal Protocol and secretly emitted thousands of tons of Freon gas every year. Nature restores itself and is faithful to its function, but humans are committing pollution and destruction beyond

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13 UV-C is an ultraviolet ray with a wavelength of 100 to 280 nm, usually completely absorbed into the atmosphere in the ozone layer.

14 Freon gas: Chloro Fluoro Carbons, CFC

the limits of nature.

## 2) Microbes and self-cleaning

Microorganisms are representative decomposers of the ecosystem and play an essential role in the material cycle, such as carbon, nitrogen, and phosphorus. The material cycle is why the Earth, a closed system<sup>15)</sup> in space, can maintain an independent ecosystem. In other words, without microorganisms responsible for material circulation, the earth cannot sustain a self-sustaining ecosystem.

Microorganisms also play a critical role in our bodies. There are about 40,000 types of microorganisms living in the human body, and the weight is said to exceed 1 kg for an adult. A team of researchers from the Arizona State University Autism/Asperger's Research Program studied the effects of microbes on the human body.<sup>16)</sup> Children with autism are nearly eight times more likely to experience abdominal pain, diarrhea, constipation, and bowel problems than those who develop normally. One of the children tried various methods to treat the bowel problems but failed. The team tried a treatment for this child that transplanted microorganisms from a person with a healthy intestine. Surprisingly, the child's bowel problems were cured when a microbiota 'Prevotella,' which protects the intestines, was transplanted. Humans make about 20 digestive enzymes to break down food, but microorganisms in the body help to digest about 10,000 kinds. They also help the human body absorb nitrogen by transforming it into ammonia, which is essential but cannot be absorbed. As such, microorganisms are an integral part of the human body.

In general, self-purification by microorganisms is divided into physical, chemical, and biological self-purification.

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15 The closed system is a term used in natural science to refer to a physical system that exchanges energy with the outside, but does not have exchange of matter.

16 <https://news.asu.edu/content/clues-about-autism-may-come-gut>

Among these, biological self-purification by microorganisms accounts for the most significant proportion. Microorganisms that decompose plastic and Styrofoam, the main culprits of environmental pollution, are also being discovered. The gut bacteria of mealworms break down the Styrofoam and excrete half of it as carbon dioxide and the rest in the feces. The feces excreted by mealworms are said to be safe enough to be used as soil for growing crops. Academia is also consistently reporting bacteria and phytoplankton that can decompose plastic. Among the reports, it was discovered that the larvae of the greater wax moth could break down plastic with its enzymes and not with gut bacteria. Rather than simply eating plastic, physically decomposing it, and discharging it as microplastic, it completely decomposes by breaking the polymer chain structure.

An archeon named ‘Methanoliparia’ can break down petroleum into methane and carbon dioxide. In April 2020, the Deepwater Horizon oil spill was the fourth largest oil spill in history. Many experts predicted that the Gulf of Mexico would not be able to recover from the accident. However, against all odds, oil-degrading microorganisms, including Methanoliparia, started to increase rapidly on the seabed in the Gulf of Mexico. Thus, the Gulf of Mexico was purified at a rapid pace as the microorganisms decomposed more oil compared to the amount removed by people.

Whereas microbes fulfill their functions faithfully, humans often avoid responsibilities and obligations. Whereas microbes fulfill their functions faithfully, people often appear to avoid duties and obligations. The world’s largest oil spill occurred in Nigeria’s Niger Delta. Since 1956, global oil companies such as Royal Dutch Shell have been mining crude oil, and

there have been as many as 6,800 spill accidents during oil extraction. Continuous oil spills have polluted Rivers, soil, and even groundwater, and people are drinking carcinogen-laden groundwater and eating contaminated fish. Although the inhabitants of the Niger Delta are still suffering, the oil companies continue to argue in court over responsibility for the spill rather than cooperation on decontamination. An attitude of avoiding responsibility cannot restore nature or bring about peace in the human world.

### 3) Immune system

The immune system protects our body from all kinds of substances, such as viruses, bacteria, toxins, and cancer cells, that should not be present in our body. However, because many microorganisms are harmless or beneficial to our body, the immune system has to operate selectively, and the scope for learning is vast. These incredibly complex and important tasks happen automatically without our brains realizing it. In fact, most of the functions essential to sustaining life, such as heartbeat, digestion, oxygen exchange, and hormone secretion, are performed in areas beyond our conscious control. The immune system is also one of the areas where consciousness cannot control.

Lymphocytes, a type of white blood cell responsible for immunity, are called the smartest cells in the body because they find, classify, analyze countermeasures and, in some cases, attack and kill countless types of intruders. Lymphocytes are largely divided into B cells and T cells. Vaccination can be effective because the B cells are responsible for producing antibodies. T cells produced by the thyroid gland are divided into killer T cells, helper T cells, and memory T cells. Killer

T cells are responsible for finding and killing infected cells, and helper T cells are responsible for helping B cells produce antibodies. Memory T cells are responsible for remembering all the invading pathogens in detail to respond faster than before. Given that immunity requires speed and accuracy, lymphocytes are truly remarkable cells. Lymphocytes are not the only ones responsible for immunity. Various immune cells such as eosinophils are also contained in tears and runny noses that are often seen daily and serve as the first line of defense against invading pathogens. In addition, the immune system is spread throughout the body, from the skin to saliva to the digestive system. Whether we are awake or sleeping, the immune system is constantly searching for invaders in the body and is doing its best to protect our body.

## 2. Role and duty

Just as the elements of the natural world maintain a harmonious state by fulfilling their respective functions, human society can also achieve peace when it fulfills its roles and duties. Peace is not achieved through the strength of one person. Just as roles such as design, construction, and interior are divided when building a house, each person must perform their roles well to build a house of peace. Young people, women, religious people, politicians, educators, and journalists all play their part in building a house of peace. If we share the same purpose and the same will, we can all join hands and work for peace.



### 1) Causes of the Chernobyl accident

There is a case in which one person's neglect of his duty has threatened the lives of many. On April 26, 1986, at 1:23:44 A.M, a nuclear power plant explosion occurred in Chernobyl, Ukraine. The accident killed 31 people from burns and heart attacks within weeks, and in 2018 the United Nations Scientific Committee (UNSCEAR) reported that about 20,000 people under the age of 18 living in areas affected by radioactive fallout had thyroid cancer.<sup>17)</sup> The surrounding livestock had absorbed the radioactive iodine generated at the time of the explosion, and it had directly affected the children who ate the milk produced from the livestock.

What caused the Chernobyl nuclear power plant explosion that caused so much damage? On the night of the accident in the control room of the Chernobyl nuclear power plant, a test was conducted on the stability of the Unit 4 reactor under low power conditions. Several engineers were in the control room, including the deputy director and chief engineer. When operating a nuclear reactor, it is crucial to strictly follow the guidelines (for safety, the output should be 700~1000MW). However, in this experiment, the deputy director broke the guidelines and ordered the output to be reduced to 200 MW. Engineers objected because the figure was too low for the standard. Nevertheless, the experiment continued. The output was lower than expected, down to 30 MW, and the reactor's control rod had to be extracted to restore power. The engineers strongly opposed this directive because the reactor's control rods are directly related to the reactor's brake system. However, the deputy chief pushed them to proceed, and eventually, the control rods were extracted, leaving the reactor out of control for engineers. The number of control

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17 UNSCEAR, Evaluation of data on thyroid cancer in regions affected by the Chernobyl accident, p9

rods remaining was only 6-8, far less than the safety standard of 30, and such excessive withdrawal of control rods was a serious violation of safety rules. Shortly after that, it generated enormous heat in the reactor, and water in the reactor vaporized. When the heat suddenly occurred, the reactor's power output rose to 300,000 MW, close to 100 times the normal power output. The Chernobyl Reactor Unit 4 could not withstand the tremendous output and eventually exploded. Structural defects in the reactor were also observed as the cause of the explosion. However, the more fundamental cause was that the deputy director clearly knew the safety guidelines but continued the experiment while violating the guidelines. In this way, the consequences of one person's failure to fulfill their duty can lead to great tragedies. Just as the safety of a power plant is maintained only when all members fulfill their duties, peace in the human world can only be achieved when everyone faithfully fulfills their roles and duties.



Figure 3-1 Radiation levels in 1996 around Chernobyl

## 2) Red Cross and Henry Dunant

The first Nobel Peace Prize winner was Henri Dunant. Born in Geneva, Switzerland, in 1828, Henri Dunant was raised by a businessman father and a mild, devout Christian mother. In particular, Dunant was greatly influenced by his mother, and in addition to his religious beliefs, he was interested in helping the poor and the sick. Dunant took over his father's business and was also active as a businessman. When Dunant visited Italy in 1859, the Battle of Solferino completely changed his life. The Battle of Solferino was a battle in which the Sardinian and French allies defeated the Austrian army. About 300,000 people fought, and about 40,000 were killed. As the battlefield overflowed with casualties, Dunant rushed to the scene and helped the wounded. After this incident, Dunant became active as a peace activist rather than a businessman. In 1862, Dunant released *Memory of Solferino*, which contained two proposals. The first is the need for a relief organization for humanitarian aid in wartime, and the second is a need for an international agreement for this relief organization to operate safely on the battlefield. Dunant invested everything in making his ideas come to reality. To realize his first proposal, Dunant founded the International Committee of the Red Cross (ICRC) in 1863 and used all of his fortunes, including the inheritance he inherited from his parents, for the Red Cross movement. The second proposal was realized with the signing of the Conventions de Genève in 1864. This convention later became the basis for humanitarian international law, helping to assist soldiers and civilians wounded on the battlefield. Dunant's life conveys a message of hope to us today that one person with the right mindset can change the world peacefully by fulfilling their role and duty.



## Conclusion

The history of humanity is said to be a history of warfare as many wars have been constantly fought over the ages. Many aspects of historical records are glorified to the extent that war is associated with wealth, honor, courage, and heroes. However, the reality of war is not so beautiful. Soldiers face gruesome deaths with their arms and legs torn off. Wars leave both the victors and the losers grieving for the loss of their families and suffering from bodily wounds. Having witnessed the reality of such war, today's human society wishes for peace more than ever and is pursuing peaceful actions. The author of *The Causes of War and the Spread of Peace*, Azar Gat, explained that since modernization, the amount of rewards given by peace has greatly increased compared to those provided by war, and the culture of peace is gradually spreading. Nevertheless, if you look around the world in the 21st century, there are still conflicts, terrorism, and military conflicts. Numerous peace agreements have been signed to establish peace, but most have not been kept. For example, after World War I, Germany and 31 Allied Powers signed the Treaty of Versailles, but this did not prevent Second World War which broke out 20 years later. As such, peace today is not a sustainable peace but a precarious one like a

glass placed on the corner of the table.

What humanity truly needs is sustainable peace, and the harmonious appearance of nature is the standard of sustainable peace that the human world should pursue. It should be recognized that the various countries and peoples of the global village are interconnected and interdependent, not subject to domination and competition. We need to change to a perspective that recognizes and respects each other's values. In addition, for peace, each country must fulfill its duties as a member of the international community and maintain order. Members of society must also be faithful to their respective roles and responsibilities. Peace achieved in this way will not be easily broken, and it will be a sustainable peace that guarantees the happiness and safety of all humanity.

## Image Credits

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Figure 1-1 [https://upload.wikimedia.org/wikipedia/commons/1/12/N.macrophylla\\_x\\_lowii.jpg](https://upload.wikimedia.org/wikipedia/commons/1/12/N.macrophylla_x_lowii.jpg)

Figure 1-2 [https://en.wikipedia.org/wiki/Atomic\\_bombings\\_of\\_Hiroshima\\_and\\_Nagasaki#/media/File:Atomic\\_bombing\\_of\\_Japan.jpg](https://en.wikipedia.org/wiki/Atomic_bombings_of_Hiroshima_and_Nagasaki#/media/File:Atomic_bombing_of_Japan.jpg)

Figure 2-1 Schokraie E, Warnken U, Hotz-Wagenblatt A, Grohme MA, Hengherr S, et al / CC BY 2.5 [https://en.wikipedia.org/wiki/Tardigrade#/media/File:SEM\\_image\\_of\\_Milnesium\\_tardigradum\\_in\\_active\\_state\\_-\\_journal.pone.0045682.g001-2.png](https://en.wikipedia.org/wiki/Tardigrade#/media/File:SEM_image_of_Milnesium_tardigradum_in_active_state_-_journal.pone.0045682.g001-2.png)

Figure 3-1 CIA Factbook, Sting (vectorisation), MTruch (English translation), Makeemlighter (English translation) / CC BY-SA 2.5 [https://en.wikipedia.org/wiki/Chernobyl\\_disaster#/media/File:Chernobyl\\_radiation\\_map\\_1996.svg](https://en.wikipedia.org/wiki/Chernobyl_disaster#/media/File:Chernobyl_radiation_map_1996.svg)

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