

# **Mechanisms Governing the Universe—A Myth or the Truth?**

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## **1. Introduction**

In the advertisement of OMEGA Co-Axial Chronometer, everything<sup>1</sup> is composed of gears (“OMEGA Co-Axial Chronometer—The perfect mechanical movement”). The more complex the organisms or the systems are, the more sophisticated are the arrangements of their components. Everything then just works its way according to a stereotyped and fixed mechanism, with the principle of adjacent gears pushing one another.

Of course these are only metaphoric representations in an attempt to exemplify the idea that everything follows a precise working mechanism, just like the mechanical watches which are promoted in the advertisement. Nonetheless, this advertisement inevitably raises an argument for me whether all objects have precise working mechanisms.

In this essay, I shall start by defining “mechanism”. Later, I will illustrate my views on whether all corporeal objects, whether they are non-living or

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<sup>1</sup> In the order of appearance in the advertisement: Fishes, seas, human beings, ships, buildings, statues, trees, cars, bicycles, sports stadiums, space technology, planets, planet systems.

living, in the universe, namely planets, plants, animals and human beings, have precise working mechanisms to explain how they work, resembling the situation shown in the advertisement. I would focus the scope on the four types of objects since I believe that they are representative enough among the constituents of the universe and the respective ideas can be extended into application to all the other objects.

## **2. Meanings and Natures of Mechanism**

From my point of view, mechanism is ordered, fixed, organized, objective and systematic. Upon pondering for a long time, I believe that in addition to its meanings, the nature of mechanism can either be simple, such as the mechanism of water freezing to form ice at 0°C or complex, such as the mechanisms of the homeostasis of different organisms. However, despite its simplicity or complexity, the basic rule of each mechanism governing each system must be simple and clear. In the former case, the basic rule lies in the redistribution of hydrogen bonds between water molecules. In the latter case, complex life processes are simply originated from the interactions of the four simple DNA bases, A, T, C and G. DNA is the secret of life (Watson 119).

## **3. Planets—With Precise Physical Working Mechanisms**

Planets are categorized in the group of non-living objects. Non-living objects can easily be linked with machinery items. It is easy to accept the idea that planets have precise physical working mechanisms. They suit the meanings of mechanism stated previously since their orbits as well as their interactions, whether attractive or repulsive, with one another can be accurately predicted with the use of mathematics, astronomy and physics (Cohen 61).

The physical working mechanisms of planets can well be applied to other living or non-living objects in the scope of motion. After all, celestial mechanics were built based on the laws of motion by Sir Issac Newton (Cohen 61). The laws of motion are universal and applicable to every object (Newton 67). Every mechanical movement can be explained precisely in an objective manner.

#### **4. Organisms—With Precise Physical and Chemical Working Mechanisms**

As James Watson, the Nobel Prize Winner in Physiology or Medicine, said, “Life was just a matter of physics and chemistry, albeit exquisitely organized physics and chemistry” (141) . I believe that all organisms, including plants, animals and humans, have precise physical and chemical working mechanisms. In these cases, the basic rule of the mechanism is DNA codes, of which every organism is composed.

DNA bases are analogous to gears in the advertisement. DNA codes for all the characteristics as well as the homeostasis of life (Watson 119). All the physical and chemical working mechanisms of organisms have one ultimate goal, which is to strive for survival. Chemical and metabolic reactions taking place inside organisms, which are working mechanisms to achieve that goal, are very organized and systematic. I would like to illustrate it with the following examples.

##### **4.1 Plants**

Photosynthesis is undoubtedly a crucial series of reactions for photosynthetic plants for their survival. Photosynthetic plants, despite being of different species, all tend to grow towards sunlight. No matter how much

they are different in physical appearance; for example, one may have needle leaves while the other may have broad leaves; or behaviors, for instance, one may be a non-flowering plant while the other may be a flowering plant, they have the same mechanism, which is positive phototropism, in an attempt to maximize the amount of sunlight received so as to promote the photosynthetic rate to make food. This mechanism is driven by the same chemical substance, auxin. (“Phototropism”)

Although other working mechanisms of plants, such as the reason for the variable size of sieve plates, are not yet known, one can never abruptly determine that the respective mechanism does not exist (“The Sieve Plates”). Instead, I sincerely believe that the underlying mechanism is just waiting to be discovered by those with patience and endurance.

#### **4.2 Animals and human beings**

One of the essential metabolic reactions which keep animals and human beings alive is aerobic respiration. All cells, whether animal cells or human cells, follow the same intricate chemical pathways to oxidize absorbed nutrients for the generation of energy for their metabolism and daily activities. The reactants, the intermediates, the final products and the catalysts of the series of chemical reactions are more or less the same for all organisms (“Cellular respiration”). They share the same precise mechanism to generate energy for them to work and live.

For the other metabolisms, different organisms may have different mechanisms. The mechanisms may differ dramatically among different species, or slightly among the same species, but they all serve the same purpose of maintaining life of the corresponding organism or the continuity of the whole species. The gears of these mechanisms are merely chemical

substances, which initiate and sustain a great variety of metabolic activities. Understanding in biology and physiology allows us to explain how each chemical reaction and thus each organism work.

## **5. Higher Animals<sup>2</sup> and Humans—Without Precise Mental Working Mechanisms**

Though I believe there are precise physical and chemical working mechanisms of organisms, I do not agree to the view that mental aspects, for instance, thoughts and emotions, of higher animals and humans are governed by precise mechanisms. By my interpretation, higher animals and humans differ from the other organisms in the way that they are capable of cognitive thinking and generation of emotional feelings (“Higher animals”). I truly believe this mental ability is unique and ever-changing which cannot be explained by mechanisms.

Nonetheless, there exist some evidences supporting the view. First, brains are the physical command centers. They are for the integration of nerve impulses responsible for sensation, memory, association and decision making. The idea that neural activities govern everything is clearly concluded by what Francis Crick, who received the Nobel Prize with Watson, said, “You are nothing but a pack of neurons.” Second, emotional feelings are results of hormones or neurotransmitters. To cite an example, serotonin is closely related to the sense of happiness. Imbalance of serotonin level may lead to depression (“Serotonin”). The above evidence makes it seem like there are mechanisms controlling mental activities. However, we must be aware

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<sup>2</sup> By the definition from *Oxford Dictionaries*, higher animals are animals of relatively advanced or developed characteristics, such as mammals and other vertebrates. (“Higher animals”)

that those evidences are merely physiological and they fail to explain the existence and generation of cognitive thinking and emotional thoughts in a mental perspective.

No one can explain why or how a single incident could trigger the series of events leading to decision making or emotion generation. If there is a precise mechanism accounting for it, why doesn't everyone have the same opinion or feeling towards the same issue, just like all mechanical watches follow the same way to count time (Kandel 185)? I deem that there is a spiritual mind to relay the mental activities to the physical brain. The neural pathway is merely a physiological way for the exhibition of ideas or feelings.

I would like to use a metaphor to illustrate my view. Brain is analogous to the console of a remote-controlled toy car. The exhibitions of the mental ideas are analogous to movement of the toy car. Once the console is moved, the electric circuit begins to work to initiate the movement of the toy car. Apparently, the console does not control the movement of the toy car, but is merely an agent relaying the instructions by the operator.

## **6. Conclusions**

I believe there are precise physical mechanisms accounting for the motions of living and non-living objects, including planets. In addition, there exist sophisticated physical and chemical working mechanisms governing organisms, including plants, animals and human beings. Every physiological events can or will be explained. By understanding the underlying mechanisms, we can admire the beauty of these systems and avoid causing disturbances which hinder the smooth flow of the respective mechanisms. We should strive to live in harmony with the mechanisms for the overall goodness of the universe.

On the other hand, I believe that there are no mechanisms accounting for the mental behaviors of higher animals and human beings. I truly believe that a biological machine can never think or feel anything (Kandel 183). In my view, there is a spiritual and incorporeal mind which gives instructions to the physical brain to exhibit the cognitive powers and emotional feelings.

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### **Teacher’s comment:**

Do all objects in the universe work like machines? Does it mean that there are precise mechanisms to explain how they work? In this essay, Ka Mei addresses these philosophical questions systematically from non-living objects, the planets, to organisms including plants, animals and human beings. Her argument that non-living objects, plants and the bodies of animals including human beings have precise working mechanisms is well-supported by persuasive examples. Being a medical student, Ka Mei explains the physiology of neural function followed by arguing the existence and generation of mind has no precise mechanism. This essay is inspiring and informative that helps the reflection on the question—Are we biological machine? A meaningful question that everyone should think deeply. (Li Ming)