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Understanding of Time and Entropy: Embracing Change for the Better

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Abstract: ***Time is the known as a fourth coordinate for describing the state of a body. Time always keeps moving forward. Change in the surroundings or circumstances is the function of time coordinate. Entropy is a fourth parameter in thermodynamics and used for describing thermodynamical state of a system. Entropy of an isolated system always increases irrespective of the transfer of heat and temperature of the body. The universe is going towards the maximum entropy that is the state of equilibrium. With help of understanding of the time and entropy, we can free from worries of change and can welcome for the better to make our life healthy and happy.***

Keywords: Change, circumstances, entropy, equilibrium, time

1.Introduction

The scenario of our surroundings continuously changes even if we are at rest or doing nothing [1]. Therefore, we continuously face changes in every aspect of life. Religious, social, political, educational, etc. values also continuously change with time, so that our attitude should not be rigid for old ones but flexible for accepting these changes, because most of the changes are the demand of time and for the better of human beings [2]. We should welcome technology and development because it is also for the better of human beings. Due to the changes, every aspect of religion and society should be sized up on the criterion of science and better for human and thereafter it should be followed or not. This scientific approach of thinking will be helpful to reduce the religious superstitions and social evils.

In thermodynamics, heat is the energy in transit due to temperature difference. Due to this transfer of heat, the change or transformation in thermodynamical state of body is named entropy [3]. Entropy is the degree of disorderness of the molecules of any system and it increases always. That is, the change in entropy of any isolated system or universe is always positive. On the other hand, the universe is moving towards maximum disorderness or equilibrium [4]. The entropy is the ratio of heat transfer to the absolute temperature of the body. Based on the principle of entropy, we can say that the overall changes in the universe are beneficial to human beings.

The purpose of our study of literature, science and technology has been to make human life better and useful. The science of living is proposed to develop scientific attitude among people to achieve this desired goal. Due to lack of scientific knowledge and thinking, people are always worried about various changes occurring around them. If we people will understand the science of time and entropy, then, we can tackle these changes in circumstances and surroundings in a better way.

2.Time and Change

Change implies making either an essential difference often amounting to a loss of original identity or a substitution of one thing for another. The time is going on continuously. If any particle or body is at rest, although its surroundings is always changing. Time is known as the fourth coordinate with three position coordinates. Therefore, changes always occur whether we are in position of restness or movement. As a person grows up, physical and mental changes take place in him. His thinking and point of view towards his surrounding and society change always [5].

Figure 1: Change

On earth the modern human (Homo-Sapiens) has been originated before two lac years approximately. Since then, his mind is continuously developing and the story of entire human development is centered on the development of human's mind. In the beginning the human resides in the clan and thereafter in the 600 BC to 300 BC the Mahajanpad (Pradesh) period has been dawned. In this period the democracy came into existence along with monarchy. It is obvious that in the beginning the power was in the hands of religious officers, then it came to the hands of kings, and thereafter in the hands of public. In the journey of continuous development, the human life has also been developed. Nowadays slavery, starvation, and other problems have been rooted out. The medical science has eradicated several life-threatening diseases. Consequently, the human life is going towards healthiness and happiness.

Mathematically, the change can be expressed as the function of time, as follows:

$$\Delta C = f(t) > 0$$

Where ΔC is change in circumstance, which is the function of time only. The change in circumstances is proportional to the time or time interval.

Figure 2: Entropy

3.Entropy and Change

Entropy is the measure of the degree of disorderness, randomness, or uncertainty of the molecules of a substance. Initially it was named transformation and recognized in the classical thermodynamics [6]. Besides this, the concept of entropy is used in diverse fields of the microscopic description of nature in statistical physics, and the principles of information theory. It is widely applied in chemistry, physics, biology, cosmology, economics, sociology, weather science, climate dynamics and information technology.

Second law of thermodynamics is also described in terms of entropy, which states that the entropy of an isolated system always increases. That is, the isolated systems evolve toward thermodynamic equilibrium, where the entropy is maximum. The entropy of any system working in the reversible cycle is constant and in the irreversible cycle it always increases. Practically, the irreversible thermodynamics processes occur, therefore, second law in terms of entropy can be expressed as follows [7]:

$$\Delta S = \oint \frac{dQ}{T} > 0$$

We can calculate the change of entropy by integrating the above formula.

We consider a thermal engine which has three main parts; source, sink and working substance [8]. When this engine works, the entropy of the source decreases but the entropy of entire engine always increases. We consider an example of an ice piece placed in a glass in a room. The ice piece takes heat from the room, so that the temperature of room slightly decreases. After some time, the temperature of ice and room become same. In this process entropy of the room decreases while entropy of the ice increases. The increment in the entropy of ice is slightly greater than the decrement in the entropy of room.

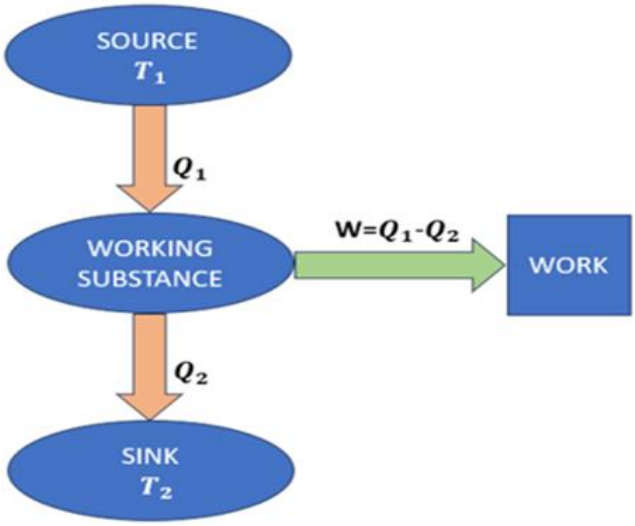

Figure 3: Heat Engine

The fundamental postulate of equal a priori probability of statistical mechanics states that each microstate is equally probable among microstates of the same energy. The entropy in terms of number of microstates can be expresses as,

$$S = K \log \Omega$$

where Ω is the number of microstates and called thermodynamical probability also.

The universe is created with minimum entropy, if it was with maximum entropy then there would not be stars, planets, etc. The temperature of stars is going to decrease in a very slow process and the remaining celestial bodies are getting energy continuously. In this process, entropy of stars is decreasing while entropy of the remaining celestial bodies is increasing. The increment in the entropy is greater than the decrement in entropy. In this way, the net entropy of the universe is continuously increasing. We can say that the universe is moving towards the maximum entropy or equilibrium. In the equilibrium, there will be no difference in temperature of source and sink. In this way, there will be no transfer of energy, that is, there will be no existence of heat. This is called heat death of the universe. Therefore, we can say that the change in the surroundings or circumstances of human being and the change in entropy of anybody both are identical. Healthy and happy human life is the destination of all changes and in the same manner the equilibrium is the state of maximum entropy. Mathematically, we can write,

$$\Delta C \cong \Delta S$$

That is, if we wish to study the changes in circumstances scientifically and analytically, we must consider the principles of time and entropy.

4.Change for the better

The change and entropy both quantities are positively correlated because changes are for better of human beings and entropy is always towards equilibrium of the universe.

Equilibrium is the state of maximum disorderness or maximum entropy. That is, the universe is moving towards maximum disorderness called equilibrium. We know that entropy of an isolated system increases always. That is, the change in the entropy of isolated system is always positive. Since the changes at any time be negative for any group or society but their overall effect for the Nation an entire human beings will be positive.

Comparing change with the time and entropy, we can say that the overall effect of changes occurring in the surrounding on human life is always positive. In the democracy a country is a welfare state, therefore, the political, social, economic, etc. changes are for the welfare of people. In the present, this may be that these changes do not seem good but in the long tine they give the positive results. Time is always changing; therefore, we should continuously face changes positively in every aspect of life. Religious, social, political, educational, etc. values are continuously changed with time, therefore, our attitude should not be rigid for old ones but flexible for accepting these changes, because most of the changes are the demand of time and for the better of human beings. We should welcome new changes in technology and development. Due to these changes, every aspect of religion and society should be sized up on the criterion of science and better for human beings and thereafter it should be followed or not. This scientific approach of thinking will be helpful to reduce complications of changes.

5.Conclusion

Everyone in this world has keen observation over changes occurring in his surroundings. He often takes these changes negatively. But, the long-term effect of the changes in circumstances of human life is only for the betterment. The law of momentum conservation states that there will be oppose of every change. Everyone feels easiness in the unchanged circumstances, but if there will be a change in circumstances everyone hesitates and thinks a lot of negative. Theory of time and entropy clarifies the various aspects of changes. Therefore, with help of the understanding of time and entropy, we can understand the logic and science behind changes. With help of understanding of time and entropy, we can say that the overall effect of the changes is always positive and for the better of human beings.

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