ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 3| March 2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

THERMODYNAMICS V/S HUMAN DYNAMICS: AN INTERESTING COMPARISON FROM TEXT TO CONTEXT

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ABSTRACT

Thermodynamics can be viewed as one of the major branches under physical science which deals with energy transformations. Transfer of energy from one zone to another, its temperature, pressure, intensity and other thermal variables coming under thermodynamics. Human dynamics stands for the science which has a look on activities of human such as transfer of ideas, emotions, and interactions through different nature of relationships in human life. It can be considered as the 'in depth' detailing of interpersonal relationships and behavioral pattern exhibited by human beings as a result of stimulus and response in different occasions. Present study is an attempt to appreciate the comparison between thermodynamics and human dynamics. Even though there exists no significantly evident similarities between thermodynamics and human dynamics, by comprehensive evaluation we can find out the close matching between two branches. The exchange and conversion of energy are the fundamental aspects connect these two domains. Thermodynamics deals with the principles governing energy changes in physical system, while human dynamics involves understanding and managing energy in human interactions, emotions and behavior. This paper aimed to analyze the implication of different laws of thermodynamics especially zero'th law of thermodynamics have significant similarity with human life. According to the reflections of the paper, laws of thermodynamics have a significant impact on human life.

KEYWORDS: *Thermodynamics, Human dynamics , zeroth law, energy transfer*

INTRODUCTION

Emotional reactions can be considered as the base of interpersonal dynamics. Positive sort of interactions accelerates human dynamics through positive bondages and will share happiness, smile and security from one person to another. When it comes to negative emotional reactions, it will spread from one person to other emitting wide and intense negative emotional reactions knowingly or unknowingly. This can be considered as the basic underlying philosophy behind human dynamics that human beings connected with each other through an invisible / imaginary web of emotional bonds. There exists a kind of 'bystander effect' which means the emotional response of a person is determined by the stimulus he/ she recieved from another person. Eventhough ' human dynamics ' is a psychological construct, it have so many similarities with different theories existed in various other disciplines. Thermodynamics is a branch under physical science which have different laws which have crystal clear similarities with basic principles of human dynamics. Present paper is an attempt to analyze the similar glances between thermodynamics and human dynamics. First law and zeroth law of thermodynamics were taken into consideration to analyze the social implications of both disciplines ie, Thermodynamics and Human dynamics.

NEED AND SIGNIFICANCE OF THE STUDY

It is a prejudiced notion of the community that two different disciplines cannot share any attribute in common and cannot be contributing to each other. Field of physical science and branch of psychology are two such fields which are considered as two entirely different hemispheres which cannot be correlated Because of this reason, there exists a research gap in this particular area which lighten the interesting similarities between laws under physical science and theories under psychology. It is the need of the hour to merge multi disciplinary fields together for getting exceptionally good and productive results for social upliftment. Thermodynamics deals with Transformation of thermal energy to work and the application side of the same (thermal engineering) seeks about how efficient manner it can be made use in daily life. Human dynamics is nothing but how efficient way a human can think , do as effective and efficient manner.

Present paper aimed to focus on the comparable similarities between laws of thermal dynamics and basics of human dynamics.

OBJECTIVES

Following are the objectives aimed to be furnished after the completion of this paper.

- What is the meaning of thermodynamics?
- What are the laws under thermodynamics ?
- What is the meaning of human dynamics?
- What are the interesting similarities between thermo dynamics and human dynamics ?

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CONCEPTUAL MEANING OF THERMODYNAMICS

Thermo stands for heat and dynamic stands for the motion out of heat. Thermodynamics stands for the governing principles of different impact of heat like temperature, pressure, volume change , transfer of heat etc within a system and system to / from surroundings. Different laws of thermo dynamics are there focusing on different attributes of heat/ energy transfer. According to the philosophy of thermodynamics, when heat and its associated characters imposed on different systems on various intensity, the mode/ nature of impacts may differ from one system to another. Thermodynamics contribute a universal framework for analyzing and optimizing energy transfer and conversion of energy and hence productive output .Eventhough thermodynamics have proven significant impact on chemical reactors, field of engineering, development of engine and other parts, climatic science etc but impact focuses on human dynamics found to be very limited. **Laws of Thermodynamics**

Here is an interesting attempt to link first and zeroth law of thermodynamics with basic underlying facts of human dynamics.

First law of thermodynamics was proposed by Rudolf Clausius. As per the essence of the law, energy can neither be created nor be destroyed in an isolated system. It can only be transformed from one form to another or transferred between objects within the system. This law is otherwise known as law of conservation of energy.

Zeroth Law of Thermodynamics were introduced as a bye product of thermodynamic laws. According to the law, if two systems are in thermal equilibrium, with a third subsystem, then they will be in thermal equilibrium with each other. In otherwords, even though if there is no thermal connection with first and third subsystem intensity of thermal energy will be same for both since energy is transferred through second subsystem.

CONCEPTUAL MEANING OF HUMAN DYNAMICS

Human dynamics stands for the concept of how human interact with the environment through their emotions. Dynamic system means active involvement or mobility/motion of a particular organism according to environmental interaction or emotional intensity. Intellectual, emotional, interpersonal, intrapersonal and interpersonal interactions of a person with the environment compel him to be mobile/ active or dynamic. Such a comprehensive idea is termed as human dynamics.

AN INTERESTING COMPARISON BETWEEN THERMODYNAMICS AND HUMAN DYNAMICS

This is an attempt just out of curiosity to find out the implications of first and zeroth law of Thermodynamics in human life or human dynamics. As already stated according to first law of thermodynamics, in an isolated system, there will not be any creation or destruction of energy in an isolated system. Rather it can be transformed from one form to another.

FOLLOWING ARE SOME OF THE IMPLICATIONS/ SIMILARITIES BETWEEN THERMODYNAMICS AND HUMAN DYNAMICS

As per the first of law of thermodynamics, humanistic energy within an isolated system will not be changed from one state to another. A person who is so isolated without any connection with the outer environment then their level of energy will be poor resulting frustration and ends up in introvert type of personality trait(Michail, 2014).

If a person is in an isolated state, then there will be no slot for him to share his ideas/feelings or listen to somebody else. This will create enormous amount of frustrations, inhibition and gradually a kind of withdrawal symptoms to society may shown. Just like first law of thermodynamics, there will not any significant improvement in level of energy of human beings when they are in an isolated condition. Humanistic energy/ activity may remain same. Introvertism may develop as a result if isolation (Vallacher,2002). We can see several glimpses of similarities between thermodynamics and human dynamics in common if we have a close look on both. Likewise energy of an introvert person or a person who is like isolated system may not be transferred any feeling from one person to another. That means the rate of social interaction is very low. But sometimes energy or mood of the person may change from one mood to another within that human being (McDougall, 2015).

According to zeroth law of thermodynamics, states that consider three system ie A, B, and C, A is having direct thermal connectivity with B, B is thermally connected to C, but A is not able to have thermal interaction with C. because of the high temperature of A, heat transfer happens from A to B and the same thermal effect may transferred to C even though there is no direct connection between A and C. Just like a system - surrounding relationship , or in other words how the efficiency of a thermodynamic system being affected by the surrounding's features, Similar ways are happening in the thought process of human being through social interactive activities and the features of surroundings or the stimulus what get through interactions with others. In such a way, Thermodynamic system can be compared with a human being. In a thermodynamic system, there exists body of matter with real /imaginary boundary where thermodynamic processes are being carried out. Like wise, integration of mind and body with real or imaginary boundary in which thought processing and hence physical responses is know as human system. Anything outside system which is seperated with a real or imaginary boundary is called surrounding. According to psychological system of a human, surrounding is nothing but the society which is interacting continuously with her/ him. Thermodynamic system undergoing series of thermodynamic process (property changes) until it achieve a state know as thermodynamic equilibrium. This processes or thermodynamic property changes is being carried out through mass or energy interaction or both to or from the surroundings. Result of cyclic processing of thermodynamic system is being evaluated for the deciding the efficiency of the same system.

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Definitely favourable surrounding is a major role in interaction during processing and hence the efficiency (Liao,Heijungs& Huppes, 2012).Consider that the hotness of tea in a cup being changed after heat energy interaction with surrounding due to temperature gradient. Temperature of the surrounding is the determining factor that the tea became further hot after process or further cool after process or keep on the same state if there is no temperature gradient.

If the surrounding temperature is higher than the tea before process lead to increment of temperature, or in other words decriment will occur when surrounding has lower temperature than tea before interaction. Similar way emotions of human being can travel to high or low depends upon the features of surroundings which they are interacting. Final condition of the thermodynamic process is nothing but thermodynamic equilibrium. Means that thers is no temperature gradient, no mass concentration gradient, and no force or moment unbalance within the system and also with surroundings.Here we can have a look to law of equilibrium or zeroth law of thermodynamics. Body A and B are having possibility for direct interaction of thermal energy but no possibility between A and C.
Since B and C are having interaction of thermal energy. In this context if body A is in a state that high temperature, heat energy will start to flow to B , and hence elevation of temperature of B .

Since Body B can interact with C , heat energy what is recieved from A will transfer to C untill the achivement of equilibrium among A, B, and C Here we can go through the "displacement " which is one mode of defense mechanism in psychology. For example, a superior officer shouted to subordinate and subordinate shouted to his wife. Even though there is no direct connection with superior and wife of the subordinate, the impact of shouting is shared by wife also.

CONCLUSION

It can be considered as an interesting comparison of psychological constructs and scientific prepositions to elucidate new flavors of facts which are useful in real life. This is an attempt to explore how thermodynamic principles metaphorically apply to human systems. This paper can be considered as a conceptual analogy rather than a direct scientific correlation. Hope the paper will pave new shades of inquisitive attempt to discover link between thermodynamics and human dynamics in a more clear way in future.

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