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An Exploration of the Concept of Life in Biology and Ṣadrian Theosophy

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Abstract

The nature of life has obsessed the philosophers and scientists for long. One of the sciences that has a very close relationship with the concept of life is biology. Biology uses two approaches to address the concept of life: the list-oriented and the science-oriented. In the list-oriented approach, the definite distinction between living and non-living beings is accepted and different lists of the features of the livening beings are provided. In the science-oriented approach, which is a better way to achieve the concept of life, the aim is to define life within a network of existing concepts of a specific field of science. In transcendental theosophy, life is viewed as a type of existence, and by the consideration of the being and life as concomitant, the life hierarchy is equaled to the existence hierarchy, and no distinct line can be drawn between living and non-living things. In this article we try to answer the question that if science and philosophy have any relationship or similarity in the exploration of the concept of life. The findings of the study demonstrate that although the question of life is investigated in philosophy as a transcendental issue and in biology as a material one, a general-specific relationship can be made between science and philosophy in defining the concept of life in the natural world domain.

Keywords

Life, Biology, Transcendental theosophy, Existence.

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Introduction

The human has always experienced life and death; the death of beings that have been alive in the past but are void of biotic processes now, or the entities that have never had such processes and have been classified as non-living things. The distinction between living and non-living beings might be easily recognizable, and it has been due to this that by the consideration of such a distinction, humans have tried to define the concept of life in opposition to the concept of death or the concept of living in opposition to the concept of non-living.

The desire to attain an understating of the nature of life and to provide an exact and clear definition of it has existed in the history of human thinking and this issue has always obsessed the minds of the philosophers and scientists. The concept of life has a fundamental role in biology. Living beings are the topic of biology and attainment of a comprehensive and all-inclusive definition of the concept of life will have an outstanding effect on the unification of the topic of this science and establishment of a holistic view to it. Definition of life can unify the theories and models about the living beings and help organize them. Definition of life can have a fundamental role in the creation of a consolidate understanding of the living beings (Caravita, 2005, vol. 39: 163).

In addition to biology, the concept of life is of outmost importance in the majority of human thought domains such as medicine, ethics, and philosophy. Examples include human organ transplantations, abortion, new methods of treatment and human life saving, and human moral concern in these domains. In the field of philosophy, too, the question of life has been a concern for philosophers under various titles such as soul, vital principle, psyche, and vital impetus. Right from the beginning, the task of defining the concept of life has been with philosophers and so, thinkers such as Aristotle, Plato, and Plotinus have addressed it. The contemporary philosophers, too, have implicitly referred to the nature of life in discussions such as purposefulness of life in general and human life in particular, attainment of a true understanding of the human, examination of the bliss or damnation of the human, and ascription of the life attribute to God.

Although it is easy to discern a living being from a non-living thing, the concept of life is vague. Therefore, there are disagreements between philosophers and scientists in defining it. Nowadays some philosophers believe that the definition of life should be with sciences; however, biologists have neglected to define life for long and probably believe that this should be done by philosophers (Bedau, 1996: 333). Spencer claims that life is not understandable through the terminology of chemistry and physics

(Durant, 1991: 55). There is also a dominant view that considers this concept self-evident, needless of definition, or impossible to define.

Just like the concept of being, Muslim philosophers consider life as an axiomatic concept, and if they sometimes provide a definition for it, their definitions are formal ones which enumerate the features and impressions of life. Even these formal definitions are not agreed upon (Tahānawī, 1996: under the entry *Ḥayāt*; saliba, 1994: under the entry *Ḥayāt*; sajjadi, 1996: under the entry *Ḥayāt*). Some biologists believe that life is a process rather than a substance. Life is a process that is always changing and it is an irreducible fact of the natural world, and so, it does not need a definition (Mautner, 2004: 4). Some also believe that it is impossible to find a general definition for it (Zalta, 2011: 1).

Up to the second half of the 20th century, even with the existence of the famous "what is life?" of Ervin Schrödinger, the definition of life did not receive much attention. However, from the 1990s on and with the expansion of the sciences such as artificial life and simulation of life processes in the computer (artificial intelligence) (Bedau, 1996: 304) as well as the advent of new subfields of existential philosophies such as Heideggerian Existentialism, the question about the nature of life was revived in the minds of numerous thinkers, though the ambiguity and complexity of the definition of the concept of life survived. One of the factors that has contributed to the ambiguity of this concept is the lack of the differentiation and distinction of the philosophy domain from the science domain, as if this concept is wandering between science and philosophy. Many definitions given for life in philosophy are pseudo-philosophical, or in other words are somewhat scientific, while some definitions in biology are pseudo-scientific, or in other words are somewhat philosophical.

On the other hand, disagreements about the formal definition of life in philosophy as well as diversity in the impressions and requirements of life in biology bring about numerous challenges for the studies that want to compare and adapt the scientific theories to the philosophical ones, and force them to rule for the existence of a conflict or at best a disparity between science and philosophy. Therefore, in this article, we investigate the scientific definition of life in biology and then, analyze and examine the philosophical definition of it in the transcendental theosophy and as a result, find the relationship between these two definitions.

The concept of life in biology

The concept of life can be examined in biology through two different approaches.

The list-oriented approach

In the list-oriented approach, an inventory of the features of a living being is mentioned; the living being should have all or the majority of these features. This type of definition is rooted in the Greek philosophy in which the concepts are clarified through Fundamentalism and inventories of their features. There are various lists of life features. In Monod's list that was suggested in 1971, the purposeful behavior, the self-determined formation, and the lack of reproductive diversity are mentioned as the main features of life. But Mayer in his 1982 list refers to complexity, organization, chemical unity, quality, uniqueness and diversity, possession of a genetic program, historical nature, and lack of certainty. In 2002, Koshland Jr. mentioned seven features for life. In his opinion, a living being can be identified based on these seven thermodynamic fundamental principles: program, immediacy, compartmentalization, energy, restoration, adaptation, and distinction from the surrounding environment. One of the most common lists of life features of the contemporary era is as following.

1. Homeostasis: the capability to stabilize the internal conditions of body or cell through different means such as sweating or decreasing the body temperature.
2. Organization: a living being is structurally made up of one or some cells, and cells are the main units of life. Even the simplest unicellular organisms have the same organization. The multicellular organisms are made up of systems such as cardiovascular and circulatory systems and these systems are made up of organs, and organs are made up of textures, and texture are made up of cells, and cells are made up of organelles such as ribosome (where protein is produced) and mitochondrion (where energy is produced), each with its specific tasks.
3. Metabolism: the set of physical and chemical reactions in the body of living beings that is accompanied by the creation of material and larger molecules from simpler compounds (anabolism) and creation of simpler compounds from more complex molecules (catabolism). In catabolism, energy is released (e.g. cellular respiration), but in anabolism, energy is consumed (e.g. photosynthesis).
4. Growth: increase in volume due to cell divisions that lead to the creation of more cells or through the enlargement of cells and creation of lager cells. The multicellular creatures have a more complex mechanism and since they have more cells, they should do differentiation. In growth, anabolism has a bigger share than catabolism.

5. Reproduction: the ability to create new organisms or new specific creatures through sexual and non-sexual reproduction.
6. Adaptation: one of the most essential principles of the Evolution theory is the creature's adaptation with the environment through different means such as genetic features, diet, and external factors.
7. Response to stimuli: the reaction of the living being to its surrounding environment is often accompanied by movements such as turning toward the light. This response can be the contraction of a unicellular creature in response to the chemical stimulus or the more complex reactions of the multicellular creatures that, in line with motion, are accompanied by the application of the senses.

These seven processes are called physiological processes that have physical and chemical bases. In addition to these seven features, signaling (communication through emission or reception of signals) and control mechanisms for preserving life are also mentioned (Mckay, 2004: 20; Zimmer, 2012: 23).

The list-oriented definitions of the concept of life are very common, but they face a lot of shortcomings.

1. Provision of a list of life signs (no matter what they are) is not equal to a definition of life. The list of the symptoms of a disease is a sign of the existence of it, but cannot specify the nature and reality of the disease.
2. From among the various features of life and the various lists, which list and how many features should be considered essential to distinguish the living being from the non-living one? Some creatures can be regarded as living without having these seven features. So which of these features distinguishes the living from the non-living?
3. How can we ensure that we have not forgotten an essential feature or have not included a non-essential one?

In recent decades, we have faced realities that can be either called latent life or anabiosis. In 1701 CE, a person named Van Leauwenhoek discovered small multicellular creatures called Rotifer. These are among the smallest multicellular creatures and there exist more than one thousand species of them. The length of their body rarely gets to 2 millimeters and some of them are only 60 micrometers long. These creatures are found in fresh water environments. The cells of the Rotifer body do not change till the end of their life. The growth of these creatures is only done through the increase of plasma. In the amiable conditions, these living beings reproduce through parthenogenesis. However, in adverse conditions, these creatures rely on sexual reproduction to breed, though the males die after reproduction. Some

Rotifers are able to live on the land for a very long time – about 13 years. During this time, all living processes – i.e. the foregoing seven processes – are stopped in their bodies. However, after some time (when these creatures are back into water), these processes are resumed.

There exist other types of creatures called Tardigrades. These live on the moss and can survive some decades without water and food and tolerate the nearly absolute zero degree, the degrees over the water boiling point, pressures near to zero, and massive pressures near the sea bed. Therefore, these creatures are called extraterrestrial!

In such cases, if we admit the common biological theory of the latent life, how can we then call these creatures living beings based on the proposed lists of life features. Is life continuity conceivable at the absolute zero degree when all life processes are halted? It is exactly because of this that there is a never-ending dispute between the proponents of the latent life theory and those of the anabiosis theory. This has been the reason for the publication of the book *To be or not to be, That is the question* in 1860 (Jeuken, 1975: 17).

The science-oriented approach

The aforementioned shortcomings and challenges in the presented lists caused biologists to adopt a science-oriented approach to define the concept of life. In other words, instead of providing certain specific lists and works about life processes and attaining a generic attribute – which in practically impossible – they study the concept of life within a specific theory or field of knowledge and evaluate that concept in relation to the set of concepts applied in that theory or biology branch (El-Hani 2008: 248). One such theory is the Evolution theory.

In the eyes of many biologists, Darwin's Evolution theory is the axis of the modern-day biology. Elliot Sober quotes Theodosius Dobzhansky – an evolutionist biologist – who says that everything in biology is meaningful only in the light of the Evolution theory (Sober, 1993: 5). Dobzhansky considers the Evolution theory as the cornerstone of modern biology (Dobzhansky, 1973: 227). Therefore, all new branches of biology are influenced by the Evolution theory. A lot of scientists do not consider evolution limited to the living beings; rather, they believe that all beings – either living or non-living – are affected by the evolution process. All the changes on the Earth, society, government, industry, business, language, literature, science, and art are under the influence of this theory (Surūsh, 1982: 62). In biology, the Evolution theory asserts that all living beings on the Earth (either extinct or not) have originated from an ancestral gene bank. The evolutionary studies in biology address the origin of the species. In general, life in the Evolution theory is considered as the natural selection of

the replicators (Emmeche, 1997: 250). Replicators are structures that can self-copy in a suitable environment. Through natural selection, evolution brings about creatures that have interactions, act differently in different environments, and in a different way cause the replication of the self-copying elements (El-Hani, 2008: 151).

Maynard Smith defines life as having features that are required to evolve through natural selection. That is to say, creatures that have the reproduction, variety, and inheritance characteristics are living, while creatures that do not have one or some of these features are not living (Ibid.). In the modern evolutionary biology, the difference between non-living crystals and the living molecules is just in the maintenance of the (good or bad) characteristics and delivery of them to the next generation. By obtaining atoms or other molecules from environment (consumption of food), the living molecules create a special pattern (reproduction) and if any change is made in the pattern due to environmental reasons, they preserve that change in the coming patterns, while non-living crystals adopt atoms from the environment (food consumption) to create a specific pattern (reproduction), but if due to environmental reasons a change is made in them, they do not deliver it to the coming patterns.

The delivery of these changes and maintenance of them is done through natural selection and the survival of the fittest. Although it seems that this definition of life has extensively overshadowed all branches of the modern biology, each of these branches has set out to propose a more specific definition of life despite accepting the natural selection. Today, biology is divided into its subfields based on the type of creatures it studies and the empirical methods it uses in studying them. These subfields include biochemistry, biophysics, molecular biology, phytology, zoology, genetics, physiology, evolutionary biology, ecology, cognitive biology, etc. In this section, we will try to attain a definition of life in some new branches of biology.

The concept of life in biochemistry

Biochemistry or biological chemistry is the study of chemical processes in biological formations. In this science, the chemists' approach is used to understand and know the biotic processes that occur in the bodies of the living beings. Biochemistry addresses the chemical structure and performance of the cellular elements such as proteins, carbohydrates, lipids, and nucleic acids. From the viewpoint of this science, this structure is dynamic. That is to say, the cell performs its activities such as growth, reproduction, response to stimuli, etc. automatically and without the

interference of any external factor. In fact, there is a type of constant and growing self-organization in the cell.

According to this view, life is a specific dynamic structure composed of atoms and molecules that demonstrate self-organization. In biochemistry, cell is considered a chemical machine that follows the rules of thermodynamics and has molecular structures and logical performance (Hopkins, 1949: 152).

The concept of life in biophysics

Erwin Schrödinger was the physicist who suggested the first definition of life based on the thermodynamic theory in 1943. His small book *what is life?* massively influenced the expansion of biology in the 20th century. This book has been written based on a series of Schrödinger's speeches. He asserts that living beings are organized systems that take energy from their surrounding environment to maintain their organization, and cause disorganization in the environment. For example, plants disorganize the solar energy to survive. Energy emits from anything that is disorganized, and a fraction of this energy can be used to help keep another system – a living being –organized. In other words, the living beings increase organization to some extent in a limited area, but the payoff is disorganization in a bigger area around them or in other parts of the world. The organization that exists on the Earth relies on receiving the energy from and creating disorganization in the Sun (Schrödinger, 1944: 77).

Schrödinger tried to explain the concept of life using physical concepts such as negative entropy. In his opinion, the difference between living and non-living things is that the formers have organized molecular structures and can replicate themselves. Therefore, life is a self-organizing physical system within the Darwinian evolution theory (Joyce, 2012: 150).

The concept of life in the artificial life science

Artificial life is a branch of artificial intelligence. Artificial life is the simulation of natural life that exists on the Earth or a type of hypothetical life. This simulation is done through synthesis of the vital constituents; the evolutionary capabilities, reproduction, learning, consequential behavior, inference of vital rules from the environment, and other biotic features are evaluated in it. In this field of study, the systems related to life, processing, and evolution of them is evaluated through simulation using robotic and computer-based models. In fact, artificial life is an imitation of the traditional biology through the recreation of the biological entities. Scholars of this field study the logic of the living systems in artificial environments. The purpose is to study living systems in order to attain a more accurate

understanding of the complex information processing that represents such systems. Relying on life simulation, scholars try to discover the laws ruling the living phenomena and more importantly, to find applications for these laws in all engineering fields in order to better use time and money (Langton, 1989: 6).

In this field of study, life is viewed "not as we know it" – as a view dominating the biological sciences – but "as what it might be" – even in computers and artificial environments. In this science, life is *simulated*, or to put it better, is *created* using computer models. Some have suggested that life can be defined in the field of artificial life as the automatic capacity of a system to respond to the unpredictable changes of the environment or in other words, the knowledge of unbending adaptation (El-Hani, 2008: 149).

The concept of life in transcendental theosophy

Studies on life have started in the past and will not end with us. Many thinkers have explored this important phenomenon from various viewpoints using the two methods of analysis and synthesis, and have come to great achievements in this regard. Life is the supreme phenomenon that is seen in the natural domain. Just like their method toward other complex realities, scholars set out to enumerate the natural factors, actions, and features of life instead of trying to define life independently and all-inclusively. Life is a phenomenon that is represented in the natural domain and its most essential features include feeling, the maintenance of essence, self-regulation, motion, reproduction, and effort to keep one's generation continuing (Ja'farī Tabrīzī, 1997, vol. 12: 195; Ibid., vol. 8: 181).

Islamic thinkers have taken the concept of life to be axiomatic and so, have not defined it; they have rather tried to prove its external existence through enumeration of its impressions. In the Islamic philosophy, there are numerous disagreements over designation, nature, and origin of life. Muslim philosophers and theologians have relied on the impressions of life to prove the very nature of life and to define its concept. To this end, they usually use a pseudo-scientific method and refer to works such as growth, nutrition, feeling, movement, intellect, and knowledge (Ibn Sīnā, 1984, vol. 1: 57; Ṣadr al-Muti'allihīn Shīrāzī, 1981, vol. 5: 1), but sometimes they just rely on comprehension and activity. For the majority of Muslim thinkers, life is closely related to knowledge and ability, and the attribute *living* is accredited to a being that can be called knowledgeable and able (Fakhr Rāzī, 1986, vol. 1: 218; Jurjānī, 1988, vol. 1: 94). Because in the Islamic philosophy life is not limited to the material world and it is found in the intellectual and immaterial worlds and Muslim philosophers want to give a definition for life that covers all worlds of existence, they assert that in the material world,

comprehension and motion are done through intellectual and motion faculties, but in the immaterial world, there is no need to faculties for these two acts, because there is no difference between the essence of a being and its comprehension, and the knowledge of a creature is the origin of its act and there is no need for a will other than the essence (Fārābī, 1926, vol. 1: 4; Ibn Sīnā, 1984, vol. 1: 600; Ibid., 2000, vol. 1: 138; Suhriwardī, 2001, vol. 2: 117; Ṣadr al-Muti'allihīn Shīrāzī, 1981, vol. 1: 413).

Allāmah Ṭabātabā'ī specifies the concept of life as "life is against death – removal of the origin of biotic acts. In an analytical view, life refers to the fact that the living being has something through which the desirable impressions for that being originate. Similarly, death means that no desirable impression for that being is emitted by the being itself. So, revival of the land is when it grows plants and gets green, contrary to the dead land in which these impressions do not happen (Ṭabātabā'ī, 1981, vol. 10: 72). Such a meaning is attributable no only to the immaterial beings, but also to God.

As mentioned above, the treatment of life impressions is a pseudo-scientific undertaking and instead of treating the impressions, we should philosophically think about the very nature of life. It is because of this that notable scholars such as Allāmah Muḥammad Taqī Ja'farī believe that life is an issue related to the quality that is active in the domain of quantity means (Ja'farī Tabrīzī, 2010, vol. 4: 405). Mullā Ṣadrā and the followers of transcendental theosophy, instead of addressing the impressions, have noted the quality of the beings and have deemed life as an existential issue like other attributes such as unity and diversity, knowledge, manifestation, intensity and weakness. This concept is not an essential concept that can be defined and attained through acquired knowledge; the essential issues are understandable only through intuitive knowledge. In Mullā Ṣadrā's opinion, the life of any being is the same as its mode of being (Ṣadr al-Muti'allihīn Shīrāzī, 1981, vol. 1: 417 & vol. 2: 235; Ibid., 1975, vol. 1: 143; Ibid., 1984, vol. 1: 271).

If life is the same as the mode of being, then the mode of being of a living creature determines the life impressions that are emitted from it. A creature with superior and more able being has more complete comprehension and more robust acts, and due to the concomitance between existence and life, it can be said that any creature is living, and as the being exists in all creatures, any creature is alive to the extent of his existential degree. Of course, he emphasized the difference between the quality of life, especially between the worldly and otherworldly bodies (Ṣadr al-Muti'allihīn Shīrāzī, 1981, vol. 2: 270-271). With regard to the worldly body, he considered life as a horizontal issue, but concerning the otherworldly body, he believed that the life is not

only essential for it, but also body is the same as life. The reason is that the otherworldly body does not need matter, topic, spiritual manager, and a soul to which it may belong and by which it can move from potential to actual (Ibid.). Therefore, if in the material world, some creatures are called non-living compared to other creatures, a kind of leniency and allegory has been put into practice, because all creatures, even stone, air, and sun, are really living, although our senses cannot understand such a life and cannot see the impressions of life in them. The majority of theosophists before Mullā Ṣadrā did not consider the elements and minerals as living beings. In their view, life could be manifested in a combination of elements that has reached a level of acceptable balance and is void of conflict (Ibn Sīnā, 1984, vol. 1: 57; Ibid., 1965: 303; Ījī, n.d., vol. 1: 140). The author of this article believes that the foregoing opinion does not contradict Mullā Ṣadrā's view. The evidence for this claim is that in line with accepting the idea of the majority, he offers the concomitance of existence with life (Ṣadr al-Muti'allihīn Shīrāzī, 1981, vol. 1: 5). Mullā Ṣadrā believes that life has different levels and degrees. He also holds that all creatures have a kind of knowledge and awareness, and this implies a kind of life. Life is concomitant to existence and because existence is a graded issue, any degree of existence is accompanied by a level of life. The lowest-level creatures are the natural things and the lowest level of life also belongs to them (Ibid., vol. 5: 258).

In some cases, Ṣadr al-Muti'allihīn defines life in a way that seemingly it does not include inanimate or inanimate and plants:

1. Life means that an entity is so that the acts conducted by the living beings – i.e. voluntary and conscious acts – are done by it (Ibid., vol. 6: 417). If the lowest level of understanding is the sensory one and the lowest-level act is the volitional one, then the inanimate beings and plants do not have life. In his book *Nihāyah al-Ḥikmah*, Allāmah Ṭabātabā'ī does not consider life – as the existential origin that is a source for knowledge and ability – to exist in the plants (Ṭabātabā'ī, 1993: 307).
2. Life depends on soul, is the inherent attribute of it but is accidently attributed to the body, and has impressions. The first impression of life is nutrition, growth, and reproduction. At the next level, there exist sense and motion. After them comes knowledge. For each of these types there is a perfective form that due to it and the faculties in its service, the impressions are imposed on the matter. This perfective form is the soul. The vegetative soul, the animal soul, and the rational soul are the three levels of it from the lowest to the highest (Ṣadr al-Muti'allihīn Shīrāzī, 1984: 271). According to this view, only

> inanimate creatures are void of life. However, the vegetative soul indicates life in the plant and sometimes causes observable movements by the plant into different directions (Ṭabātabā'ī, 1981, vol. 10: 82).

Accordingly, in some assertions of Mullā Ṣadrā, all degrees of being have life and life is a perfective level for every specific living being because it is a being (Ṣadr al-Muti'allihīn Shīrāzī, 1981, vol. 6: 418). In some other assertions, he uses life in its specific meaning that does not include one or two groups of creatures. However, with setting the concomitance of existence and life as the main principle, we can consider life as a graded fact that has different degrees and each creature enjoys a degree of it according to its existential expanse; the intensity and weakness of the degrees of being is a factor for the differences between the impressions of life at any degree. Comprehensions and acts depend on the being, and even we can say that they are the being itself. Therefore, a piece of stone has a kind of awareness and act, even if we do not understand it. It is through such a view that the bead-telling by the whole existence is justified. Although Suhriwardī, too, considers the existence arbitrary (Suhriwardī, 2001, vol. 1: 187), he believes in the unity of light and the true life and so, he holds that no creature is ignorant of itself but rather, it has comprehension and act. Life is manifestation and luminosity, that is, an entity that is manifest by itself and knows about itself; any living being is the pure immaterial light (Shahrzūrī, 1993: 117).

The relationship between biology and philosophy in the exploration of the concept of life

There is no doubt that natural sciences have philosophical presuppositions and so, philosophy greatly influences science. On the other hand, the recent developments in natural sciences, too, have had a deep effect on the theological and philosophical theories. In some common issues, science and philosophy set different methods and purposes for their exploration and find facts that improve our understanding of the reality. However, one of the problems of suchlike studies is the lack of a true distinction between the science domain and the philosophy realm. Scientific theories cannot be proved or rejected through philosophical propositions, as the philosophical propositions cannot be used to prove or reject scientific propositions.

In the author's opinion, the lack of distinction between these two domains of human thought has augmented the complexity of realizing the concept of life, because sometimes philosophers have relied upon pseudo-scientific definitions and the scientists on the pseudo-philosophical definitions to define this concept. Nonetheless, the question of life in philosophy is

investigated as a transcendental and immaterial issue, or in the Ṣadrian theosophy as "the being of life". Being is a philosophical object and we can understand the being of life through reflection on our own being. By understanding my existence and coming to have an intuitive knowledge about the condition "I do exist" I can understand that "I am a living being". In fact, I find myself a "living being" and this is the concomitance of being and life. Being and life are so intermingled that cannot be distinguished from each other. "The being of a human" is the same of "the life of a human". In addition to the transcendental theosophy, such thinking can be found in Thomas Aquinas' opinions, "Life is the being of living things" (Jeuken, 1975: 19). Schrödinger's definition of life can also be attributed to such a grasp: the physical condition of a creature is called life.

Through attainment of an intuitive understanding of oneself, the human can achieve an intuitive understanding of life, and deliver what he has found through the intuitive knowledge to the world external to his being and rule for the existence of life in the external world – even if these impressions of life are not sensible or understandable for him.

The oneness of being and life in philosophy can yield some results. These include

1. Just like the concept of being, the concept of life is axiomatic and undefinable.
2. All degrees of being have life, even stones and crystals. Anything which exists is living and to the extent it entails being, it has life.
3. Just like being, life is a hierarchical, graded issue and so, the life of a piece of stone or crystal is different from the life of a plant, animal, or human. In other words, the lower or higher levels of living beings on the hierarchy agree with the hierarchy of life. In this philosophical stance, even minerals have a kind of life, but their degree of life is different from the degree of life in a plant or a human.

Contrary to philosophy, the definition of life in biology is based on distinguishing the living thing from the non-living thing and the impressions that the living thing shows but the non-living thing does not. Biology does not deal with the "being of life", but rather addresses the "appearance and origination of life" and tries to know the life of the living thing through its impressions. Therefore, the modern-era biologists examine the molecular structures and cellular functions to specify the concept of life. The concern of a scientist is not the attainment of the nature and being of life. Rather, he either considers this the duty of philosophers or deems it an essentially impossible undertaking.

Although the topic of philosophy is the being of life and the topic of

biology is the origin, appearance, and impressions of life, these two fields of study can collaborate to make useful contributions to the clarification of the concept of life. It might be claimed that the scope of the concept of life in philosophy is wider than biology and the absolute general-specific relationship exists between them. In biology, a limit – such as unicellular organisms – is set for the identification of a living thing from a non-living thing. In philosophy, however, it is believed that under this limit there exists life in lower degrees. Although creatures at that level do not manifest the impressions intended by the scientists, they have the lowest types of life. When biologists rely on the removal of the impressions and signs of life or lack of these signs to call a creature as non-living, they mean that life does not exist in that creature as it is expected to be in suchlike creatures, rather than the lack of any degree of life in it. In other words, the evident attributes of life do not exist in the non-living matter.

The important point that should be noted is that by reflection on some definitions of life in biology, it is found that these very definitions, too, cannot bring about a clear and flawless distinction between living and non-living things. For instance, if we define life as "a specific structure of atoms and molecules that can self-organize" or as "the constant adaptation of the internal relationships with the external relationships" or as "having motion and understating", then we will not have a precise criterion for the differentiation of the living from the non-living. Nowadays scientists are certain that seemingly nonliving matters are not motionless, but rather, they have dynamic movements; this is verified by quantum physics. Likewise, we have the concept of comprehension in the artificial life. The majority of the biological definitions of life presuppose the distinction between living and non-living beings, while finding this boundary is very difficult. It is at this point that philosophy can help science and assert that the reason for the lack of ability to draw a distinctive line between living and non-living beings is that in fact there is no such boundary and life is a continuous hierarchy of life on which different creatures can be placed.

Conclusion

With a comparison of the definition of life in biology and Ṣadrian theosophy we can conclude that although these two domains of human knowledge have looked at this concept from their specific angles, an interesting relationship exists between these two types of definitions. Nowadays, the biological definition of life is based on understanding the life through the examination of the molecular structures and cellular functions, and although a definite boundary is drawn between the living and non-living things, what occurs in

practice is the difficulty of identifying the living from the non-living. However, the Ṣadrian definition of life is based on the "concept of life" in which life is not considered a material topic, but rather, it is deemed as an immaterial and metaphysical issue. In philosophy, the only difference between the living and non-living things is the gradual difference resulting from the gradual and graded degrees of life. However, this difference in perspectives not only does not bring about any conflict between philosophy and science, but these two fields of study can collaborate to expand our understanding of the nature of life.

If a philosopher believes in the concomitance of life and being, considers the concept of life in the limited scope of biology, and looks at it like a biologist, he will define life as "the same matter that is manifested in the higher and more complex degrees of life and can be divided into vegetative, animal, and human life types". By the amalgamation of the philosophical and biological definitions of the concept of life, it can be concluded that the more complex structures of matter demonstrate the higher degrees of being. Therefore, it is evident that the philosophical definition of life is more general than the biological definition of life.

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