

Contemplating on human dignity: who counts as human?

Seyed Abdosaleh Jafari¹, Nafiseh Tavasoli², Hanieh Tavasoli^{3*}, Soheil Abedi⁴, Ahmad Fayaz Bakhsh⁵, Behin Araminia⁶

1. Researcher, University of Religions and Denominations, Research Center for Religions and Denominations; Researcher, Medical Ethics and History of Medicine Research Center, Tehran University of Medical Sciences, Tehran, Iran.
2. Researcher, Endocrine and Metabolism Research Institute, Endocrine and Metabolism Research Center, Tehran University of Medical Sciences, Tehran, Iran.
3. Resident of Neurology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
4. PhD Candidate in Medical Ethics, Medical Ethics and History of Medicine Research Center, Tehran University of Medical Sciences, Tehran, Iran.
5. Researcher, Sina Trauma & Surgery Research Center, Tehran University of Medical Sciences, Tehran, Iran.
6. Researcher, Mental Health Research Center, Iran University of Medical Sciences, Tehran, Iran.

Abstract

The fundamental topic in humanities is clearly the study of humans. Neglecting the understanding and recognition of humans can hinder us from achieving generalizable results and may lead us toward arbitrary and group-based decisions. Failure to distinguish between biological species up to the point of denying the objectivity of species, conflicts between nominalists and realists, and limitations of logical definitions are problems that will be addressed in this article.

In this study, it is argued that there is no universal definition for human beings as a biological species. Therefore, from a philosophical perspective, the rights and characteristics that are associated with humans in humanities cannot be attributed to human beings as a mere biological species. In an attempt to settle this issue, a minimal shared definition of “human” (as a philosophical entity) that encompasses differences and exceptions has been accepted and recognized.

It is evident that an attachment cannot stand on the same level as the essence, and discussions regarding their incorporation should be considered.

In this article, it has been concluded that the criteria for the philosophical human are self-awareness and freedom of choice, and offering a definition for “human” will be founded on these two features.

Keywords: Humans; Consciousness; Personal autonomy; Human identification; Human species; Species identification.

*Corresponding Author

Hanieh Tavasoli

Address: Department of Neurology, Ghaem Hospital, Ahmadabad Blvd., Mashhad, Razavi Khorasan Province. Iran.

Postal Code: 9176999311

Tel: (+98) 51 38 01 25 22

Email: haniehtavasoli74@gmail.com

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Introduction

The fundamental subject in all branches of humanities is none other than the study of humans or people. All disciplines within this extensive field require an understanding of human beings and their identity. Other fields also rely on all or parts of this definition, sometimes directly and intrinsically (for instance biology) and sometimes indirectly and through mediation (for example art and industry).

The significance of this discourse in bioethics can be viewed from two perspectives. First, its position in medical ethics as one of the branches of humanities, since human dignity is a foundational concept in bioethics and a basis for many national and international documents that regulate bioethical issues (1). Some bioethicists argue that human dignity is the source of all human rights; others claim that human dignity is a vague notion and therefore a useless one (2, 3). It is widely accepted that presenting a clear definition for human dignity is rather beneficial and important in resolving debates on this matter and reinforcing the foundation of human rights. However, it is challenging to attempt to provide a definition for human dignity without first defining “human”.

The second significance of defining “human” in bioethics lies in the fact that although medicine is

an empirical discipline, it is concerned with human beings and therefore in need of a definition for the word “human”. Surprisingly, despite this prominent and extensive need, the definition has been less explored in a substantive and independent manner, often treated as a preamble or a peripheral essay that needs to be surpassed in order to reach the main text. Even in the given definitions, a challenging approach has been absent and humans have been regarded as pre-existing beings (4).

Although everyone is presumably familiar with the broad concept of “human” due to daily encounters with its manifestations, it is quite clear that defining and recognizing humans without going into details and through generalizations is the basis of many troubles and slips in thinking and a misrecognition of the whole concept. This lack of attention to understanding and identifying humans can prevent us from achieving universally applicable conclusions for all humanity and can lead to transient and superficial decision-making.

In fact, a criterion for human identification should be able to encompass all human instances within the realm of thought and also exclude any non-human behavior by examining the characteristics of human beings. In this study we will examine the definition of human in fields that have provided

one and will go on to investigate the thoroughness and acceptability of those definitions, and then we will then present our preferred definition of the word.

Discussion

The Etymological Definition of Human

In literature and in various languages, different terms have been used to refer to the concept of human. In Persian “*mardom*” and “*adami*”, in Arabic “*ensan*”, in French “*homme*”, in German “*Mann*”, and in English “human”. Etymologists believe that the word “*ensan*” in Arabic is derived either from the word “*ons*” (getting used to something and not being afraid of it) or “*nesyan*” (forgetfulness) (5). However, exploring these roots and searching for the reason behind these namings does not go beyond a simple definition or suggestion and cannot help establish the criteria for human identification.

Indeed, our problem in defining the word human (*ensan*) does not lie in whether the root of this word comes from “*ons*” or “*nesyan*”, as it does not affect the logical definition (4). If we consider the root of the word “*ensan*” to be “*ons*”, which also indicates that humans are living beings capable of social interaction and not solitary creatures, we will admit that the definition merely reflects the interpretation

of a particular group of people who initially emphasized one characteristic of humans and named the species accordingly. It is evident that the selection of this characteristic is merely a matter of personal preference and does not encompass universal and distinguishing features of all people. It is widely recognized that even a dog can show social behavior and, conversely, some humans can be unkind and unfaithful. If we argue that “*ensan*” has been derived from the root “*nesyan*” (forgetting), we will face a similar situation, as forgetfulness is more prevalent in animals than in humans, and humans are not even the best example when it comes to forgetfulness.

The first and foremost deviation in the recognition and identification of humans lies in moving away from the conceptual definition toward explanation and linguistic representation. While extensive etymological investigations of words are valuable from a linguistic perspective, they hold little value from a philosophical and logical standpoint. Therefore, in this essay, we see no need for further elaboration on this matter or additional etymological research on the names.

The Biological Definition of Human

In terms of biological identity, all current human populations are classified as *Homo sapience*

(Latin: wise man) (6, 7). The term was coined in 1758 by Carl Linnaeus, who is often regarded as the father of modern taxonomy. At the time it was already recognized that humans bear a closer physical resemblance to primates than to any other living organisms. However, categorizing humans alongside other natural entities in the same classification system was considered quite bold at the time. *Homo sapiens* is one of the various species classified under the genus *Homo*, and it is the sole surviving species, with all others having become extinct (8, 9).

In the biological definition of human the species is mentioned, so the definition of human is dependent on the species.

The attempt to define species has a long history and has been debated among different philosophers and biologists for years. First, we will examine the views of philosophers about species, and then those of biologists.

The Philosophical Definition of Species

According to Plato, species are not arbitrary or conventional classifications, but natural kinds that reflect the design and purpose of the Demiurge, or the divine craftsman. Species are also fixed and immutable, since they are based on the eternal and unchanging “forms”. Plato's theory of species is based on his Theory of Forms, which holds that

there are ideal and eternal forms that exist in a separate realm from the material world. According to Plato, these forms are the true reality and the source of all knowledge and being (10). There is no room for evolution or variation within species, since that would imply a deviation from the ideal pattern. Moreover, species are not composed of individuals that have their own essence or identity, but rather collective entities that share a common nature derived from the Forms (11). Plato's theory of species is no longer valid today, as it is based on a flawed and outdated metaphysical theory that does not correspond to our empirical and logical understanding of reality. Plato's theory of species may have some value as a way of expressing the essence or ideal of beings, but it cannot be taken literally or scientifically (12).

Aristotle's theory of species was based on his own concept of form, which was different from Plato's Theory of Forms. The main difference between Plato's and Aristotle's theory of species is that Plato believed that the forms of all things were separate from the tangible things themselves, while Aristotle believed that they were the essence or nature of those tangible things. In other words, Plato thought that there was a gap between the ideal and the real, while Aristotle thought that the ideal and the real were inseparable (10, 13). Aristotle's

theory of species was based on his metaphysical assumptions about the nature of causality and reality, which are not supported by empirical or logical arguments today (14).

Al-Farabi classified the species into different categories according to their level of perfection and proximity to the First Cause, which is God. The First Cause emanates the Second Cause, which is the intellect, or the first created being. The intellect emanates the ego, which is the source of life and motion. The ego emanates the body, which is the lowest and most material level of being. The body consists of the four elements (fire, air, water and earth) and their compounds, such as minerals, plants, animals and humans. Each level of being has its own species, which are arranged in a hierarchical order according to their degree of perfection and resemblance to the First Cause (15, 16). Al-Farabi believed that the distinction only belongs to minor intelligence, and the concept of grand intellectualism also finds its existence in his eyes because it is minor at first (17). That is why some scientists and biologists have denied the reality of species. For example, William Ockham and other nominalists consider the species to be an abstract and subsequent entity, believing that what is present in reality is only individuals (18).

The concern does not solely revolve around the conflict between nominalists and realists. It is not about whether the species are external or mental entity, antecedent or subsequent, and whether we choose to return to convention and familiarity as the logic and foundation of identity. The concern lies in the valuation of each human characteristic based on its role in labeling the species as “human”, whether it is customary or scientific, antecedent or subsequent. Therefore, nominalism is not a dead end for our purpose, as our question delves into a deeper realm that is beyond the clash of nominalists and criterion-seekers.

The Biological Definition of Species

The philosophical denial of the objectivity of species does not necessarily lead to the denial of biological species. Biologists do not advocate the external objectivity of the concept of species. Their debate revolves solely around the credibility or incredibility of the concept of species, albeit in a mental and subsequent sense.

However, biological identity should also present a fundamental and prominent characteristic for differentiating species. Morphology, reproduction, genetics and population behavior are the most prominent biological propositions for this superior feature. In the biological definition of a species,

these four aspects are usually emphasized, but their application has various shortcomings.

Examination of Biological Characteristics

1) Morphology

Morphological classification has been the first method of categorizing species. According to the morphological definition, species represent the most fundamental categories that are consistently and clearly distinct, identifiable by ordinary means (19). However, sometimes significant morphological differences between races and subspecies within a species are more noticeable than the morphological differences between two separate species. Conversely, despite numerous morphological similarities between two creatures, many species-specific functions may be absent, for example fertility and coexistence for the formation of a population or community. Another challenge in the field of morphological species identification is phenotype plasticity, which is the ability of an organism to exhibit different forms under varying environmental conditions (20). These observations have led to the belief that "morphological differentiation within a natural population is nothing more than a byproduct of genetic divergence resulting from reproductive separation" (6).

2) Reproduction

In the nineteenth century, the concept of "biological species" was introduced by the zoologist Mayr as "groups of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups" (21). However, a definition based on reproduction or replication alone cannot be sufficient to identify species as it is inapplicable to asexual organisms, and also many species reproduce through self-fertilization. Sometimes, only a few individuals within a species are fertile, and in special circumstances, reproduction is seen even with the birth of fertile offspring among individuals of closely related species (6, 19). It should be noted that fertility as criteria for classification of species merely indicates the similarity of the reproductive system and can sometimes divide identical forms into two types and unite dissimilar ones.

3) Genome

Another hypothesis for differentiation of species is the genetic perspective or genetic mapping, and therefore the use of genomic methods has grown greatly. One of the most widely used genetic methods is DNA barcoding, which is a powerful tool for identifying and discovering species. It utilizes one or more standardized short DNA regions (such as the mitochondrial COI gene in animals) for taxon identification (22). This method

has its limitations, for example cryptic species (species that look similar but are genetically distinct), phenotypic plasticity (organisms with varying phenotypes due to environmental factors), different evolutionary scenarios, and finally incomplete reference libraries (23). Apart from the fact that not all genetic maps have been constructed yet, the genetic differences between closely related species can be minimal, and even within the same species, notable variations can be observed. Also, the genetic map is different in some syndromes and the difference can be seen even in the number of chromosomes with other members of the same species (7). Such differences, however, are not considered to be outside of species. Furthermore, eggs and larvae, hydatidiform moles in viviparous mammals, isolated body parts of organisms that can be reproductive in plants and occasionally in lower animals, and an organism's corpse can have the exact identical genotypes as mature and developed specimens of the same species. However, a fertilized egg, severed limbs or a human corpse have not been recognized as human beings. Even if eventually the genetic makeup of every species (especially humans) is mapped, it does not seem likely that the boundaries of intraspecies variations be determinable. Such a map alone would not be sufficient to differentiate

all instances or explain all the intraspecific differences and characteristics. Therefore, the genetic structure alone cannot serve as the sole criterion for species identification.

4) Behavior

Some researchers have proposed behavioral classifications for certain groups of animals, for instance primates, birds and insects. These classifications are based on the observation and analysis of various aspects of animal behavior, such as social structures, communication, mating systems, foraging strategies and learning abilities. However, there is no universally accepted taxonomic classification of species based on their behavior (24). Although the behavioral and demographic separations within species are obvious, exceptions that disturb inclusiveness and distinctiveness cannot easily be ignored. It must be emphasized that behaviors are external features and constitute the links among members of the same species, and they should be evaluated as the result of species separations and not their cause.

The inability of each of the above-mentioned four characteristics in defining species has led to their integration and utilization in the biological definition (19). However, employing multiple parallel characteristics in a definition itself indicates a lack of true criteria for each of those

characteristics, especially when every additional characteristic that is introduced still leaves room for exceptions and outliers. In other words, based on the initial and universal definitions of biological species, we cannot separate humans or any other species in such a way that they become distinct entities with separate rights and definitions from other animals, while also encompassing all peripheral individuals of that species.

Although the striking similarities and differences between humans and closely related species are not readily apparent, the philosophical significance of this presumption and the occurrence of such similarities in other analogous species indicate the need for philosophical inquiry and discourse in the case of the human species. The answers may not be necessary for identifying and recognizing individual human specimens, but are required for elucidating and identifying the concept of humanity and establishing a cognitive framework aligned with it.

The Logical Definition of Human

The task and the implementation of identifying concepts in humanities rely on logic. In most subgroups of humanities, the logical identity of humans is the basis of further assumptions. Therefore, in the search for a comprehensive and distinctive identity for humans, one should turn to

their logical identity after their biological identity. In logics, humans are defined as “rational” or “knowing” animals. Many philosophers have advocated this definition, for instance Aristotle, Alfarabi, Descartes and Wittgenstein (25, 26). However, there are deficiencies and shortcomings in using this definition as a criterion and in aligning it with human biological examples.

Firstly, certain levels of understanding and rationality can also be seen in other animals, specially primates (27). It is evident that most or all behaviors of animals are justifiable from the perspective of “knowing”, indicating the existence of a degree of logic in these behaviors, although it is accepted that logic is much more developed in humans. The prominent point to consider here is that the existence of a level within a spectrum in a thing will not create a difference between that thing and others on that spectrum, whereas in common understanding and humanities, humans are considered as distinct from others and a quality beyond quantity is attributed to them.

Secondly, from a semantic perspective, the logical identity of humans is not exhaustive or defining, but rather representative and conventional (28). In representative identification, the easiest distinguishing characteristic is selected and emphasized in order to represent and communicate,

even if it is arbitrary and conditional. The purpose is not to display the most fundamental separating factor between the identified entity and other things; rather, it is a quest for the easiest way to separate entities. In the realms of philosophy and logic, the description of “human” is seen as a natural definition. This occurs when, through inductive reasoning, the mind identifies one or more qualities that are rudimentary to an entity. These qualities define the entity by its characteristics. This stands in opposition to an essential definition, which involves comprehending an entity in a complete way, to understand its fundamental nature or essence (29). The definition of humans as "knowing animals" also assumes that other animals are not knowers, because if, for the sake of argument, a dolphin or another animal is found to be a knower, it would also fit within this definition, and one should consider them as humans in spite of all the differences. It is evident that such an intelligent dolphin, although remarkable in its own right, would not be considered human. Therefore, logicians have not taken into account these assumptions because this definition was only intended for the practical separation of humans from other beings and not for philosophical purposes.

Thirdly, it can be argued that based on this definition, infants, severely mentally disabled individuals or insane people should not be considered human. This inconsistency in categorizing certain beings as human is evidence of the existence of various levels of humanity, where at some levels human status is evident to all, while at other levels it becomes a subject of debate.

Therefore, the logical identity of humans cannot encompass all biological human specimens, and the rights and characteristics attributed to humans in humanities cannot be philosophically attributed to all, simply because logic would fail to offer a comprehensive definition of human being. It seems that trying to achieve a basic and comprehensive characteristic for humans is a fruitless effort that has been going on for centuries. Nevertheless, scientists have not given up on these inadequate definitions and have offered various criteria for being human, and those who did not meet these criteria but were recognized as human beings from the point of view of custom or biology have been included in the category. For the time being, biological and logical definitions seem to be the main pillars of the existing and conventional definitions of human. It is obvious that the extension is not the same as the original, which

means a hierarchy should be considered in this definition.

Human in Humanities

Perhaps the most significant reason why logicians refrain from offering a biological definition of human and presenting a complete and comprehensive logical identity is that due to the continuous and connected essence of species, it seems impossible to achieve a definition that encompasses all conventional and biological examples. Settling for defining humans as intelligent or rational beings clearly indicates that biological humans who are detached from intelligence and rationality did not force logicians to change their criteria. The reason might be that they were not seeking a definition that would cover all biological examples, but rather a criterion that would serve as a foundation for humanities and provide the basis for human rights and characteristics. However, after delving into these subjects, it becomes evident that there is no need to provide a biological definition for all instances of humans and many biological and marginal exceptions to whom no one is trying to attribute superior human qualities. Thus, the biological definition of human is merely the definition of a species and nothing more.

In other words, logicians have already accepted that the distinguishing factor between humans and other living beings is not a biological concept that can be derived from the search for its criteria. Therefore, they are not concerned that instances of unintelligent biological humans are excluded from their definition while hypothetical intelligent animals could be included in the definition. What is prominent and distinguishing for logicians is precisely this, and they are not concerned with fine-grained delineations. Thus, the human being that logicians define as a rational, speaking animal is not a biological human, but rather a philosophical human. The relationship between philosophical and biological humans is general and exclusive in practice, in that all philosophical humans are biological humans but there are some biological humans who are not philosophical humans (Figure 1).

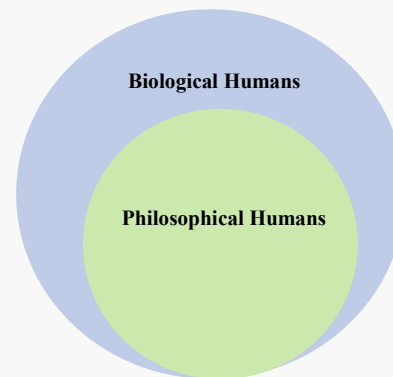


Figure 1. Relationship between biological and philosophical humans in practice.

In theory, however, this relationship can be general in some respects and particular in others, that is, there are philosophical humans who are not biological humans and there are biological humans that are not philosophical humans (Figure 2).

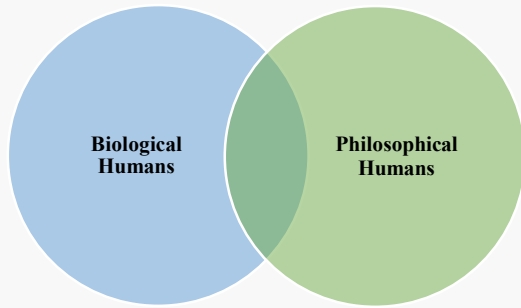


Figure 2. Relationship between biological and philosophical humans in theory

Our Chosen Criterion for Distinguishing the Philosophical Human

We need to decide whether wisdom and rationality is really enough for identifying philosophical humans. It seems that the existence of certain levels of intelligence in animals means that it cannot be the criterion for true differentiation. It is agreed that human intelligence surpasses that of other animals by a long distance, but as there is a spectrum of wisdom and intelligence, it cannot be a true criterion of distinction. True differentiation lies in something that is not present in other creatures.

Perhaps the only true difference between humans and other animals is not anatomical, but belongs in the realm of behavioral biology. This difference is “the commitment to what is not naturally

necessary”. Animals are often considered to be driven by their instincts, which are innate and inherited behaviors that are triggered by certain stimuli or situations. Instincts are supposed to be adaptive and beneficial for the survival and reproduction of the animal. However, some people may argue that animals can also act against their instincts and show flexibility and creativity in their behavior. They may cite examples of animals that display altruism, curiosity, playfulness or disobedience, which seem to contradict their instinctive goals. Critics argue that animal creativity and empathy are anthropomorphic projections of human emotions and cognition onto animals, and that they are not based on rigorous scientific methods or criteria (30). They also challenge the validity and reliability of the experimental designs and measures used to assess animal creativity and empathy, and suggest that alternative explanations such as associative learning, reinforcement or imitation can account for the observed behaviors.

For example, altruism can be explained by the theory of kin selection, which states that an animal can increase its genetic contribution to the next generation by helping its relatives, who share some of its genes. Therefore, altruism is not really against the animal's instinct, but rather a form of

indirect selfishness (31). Curiosity and exploration can be explained by the theory of optimal arousal, which means an animal seeks a balance between boredom and anxiety, and that novel and challenging stimuli or situations can provide stimulation and reward. By this reasoning, curiosity and exploration are not really against the animal's instinct, but rather a form of optimal adaptation (32). Play and creativity can be explained by the theory of learning and development, which states that an animal can enhance its skills and knowledge by practicing and experimenting with different behaviors, and are therefore not against the animal's instinct, but rather a form of preparation and improvement (30). Finally, disobedience and rebellion can be explained by the theory of social dynamics, according to which an animal can benefit from changing or challenging the status quo if it is unfair or oppressive. Thus, disobedience and rebellion are a form of social change and justice and not against the animal's instinct.

Unlike other animals, humans can adhere to what is against their instincts and consider it necessary for themselves. Perhaps this capacity for credibility, willpower and commitment, which is chosen freely, can be the main criterion for the philosophical human.

Conclusion

The biological human is inherently connected to other biological species and therefore a true criterion for differentiation of all its examples is not available. All definitions of the biological human are incomplete and imperfect, and what truly separates human beings from other animals and may be a genuine criterion for its definition does not pertain to the biological human itself; rather, it is characteristic of a being that serves as the foundation of humanities. We call this being a philosophical human, and the non-intelligent biological humans are merely additions.

From our point of view, any creature that can choose and is committed to doing something against its instincts and desires may be included in this definition of the philosophical human, even if it is outside the scope of the definition of biological human. Of course, this assumption has not been observed in the real world so far and all examples of the philosophical human are a subset of the biological human.

In conclusion, it should be added that in any relevant scientific field, one should pay attention to the differences of biological and philosophical humans and choose the appropriate definition according to the situation. For example, when

defining human rights, the term “human” refers to the biological human, and the philosophical human is discussed more often in theological and mystical matters.

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References:

1. Andorno R.. Human dignity and human rights. Handbook of global bioethics. 2014; 45: 45–46.
2. Duwell M. Human dignity and human rights. Humiliation, degradation, dehumanization: Human dignity violated. 2011: 215-230.
3. Gilabert P. Human dignity and human rights. USA: Oxford University Press; 2019.
4. SMM. Human dignity from an Islamic perspective. Iran: Imam Sadiq University; 1999.
5. Al-manzour I, lissan al-arab. Beirut: Dar ehya al-tarath al-arabi. 1987; Vol. 1. p.231.
6. Mayr E, Populations, species, and evolution. Mashhad: Nima Publishers; 1987, Vol. 1.
7. Robert L, Roderick R, Huntington W. Thompson & Thompson. Genetics in Medicine. Tehran: barayefarda; 2009.
8. Tattersall I. Homo sapiens. [cited on 2024]; Available from: <https://www.britannica.com/topic/Homo-sapiens>
9. Finlayson C. Biogeography and evolution of the genus Homo. Trends in Ecology & Evolution, 2005; 20(8): 457-63.
10. Copleston F. A history of philosophy. Tehran: Soroush; 2010, Vol. 1.
11. Shields C. Plato and zristotle in the academy, in The Oxford Handbook of Plato. Fine G. edt. UK: Oxford University Press; 2019.

12. Fine G. Introduction, in on ideas: aristotle's criticism of plato's theory of forms. UK: Oxford University Press; 1995.
13. Preus A. Science and philosophy in aristotle's "Generation of Animals". Journal of the History of Biology. 1970; 3(1): 1-52.
14. Lewens T. Species natures: a critique of neo-aristotelian ethics. The Philosophical Quarterly. 2020; 70(280): 480-501.
15. Deniz G. Al-Farabi on Divine Knowledge. Islamic University of Europa. Journal of Islamic Research. 2009; 2(2): 24-33.
16. Menn S. Al-Farabi's metaphysics by the stanford encyclopedia of philosophy 2021. [cited on 2024]; Available from: <https://plato.stanford.edu/archives/win2021/entries/al-farabi-metaphysics/>
17. Anonimos. Distinction of existence in the philosophy of Mulla Sadra and new western existentialism. 2008. [cited on 2024]; Available from: <https://library.tebyan.net/fa/Viewer/Text/65739/0/>
18. Copleston F. A history of philosophy. Tehran: Soroush; 2010, Vol. 3.
19. Aldhebiani AY. Species concept and speciation. Saudi J Biol Sci. 2018; 25(3): 437-40.
20. Levis NA, Isdaner AJ, Pfennig DW, Morphological novelty emerges from pre-existing phenotypic plasticity. Nature Ecology & Evolution. 2018;. 2(8): 1289-97.
21. Mayr E. Systematics and the origin of species, from the viewpoint of a zoologist. USA: Harvard University Press;1999.
22. Antil S, et al. DNA barcoding, an effective tool for species identification: a review. Molecular Biology Reports. 2023; 50(1): 761-75.
23. Ross HA, Murugan S, Sibon Li WL. Testing the reliability of genetic methods of species identification via simulation. Systematic Biology. 2008. 57(2): 216-30.
24. Cain AJ. Taxonomy by encyclopedia britannica. [cited on 2024]; Available from: <https://www.britannica.com/science/taxonomy>
25. Hassanzadeh H. Human in the view of mystical tradition, ⁴ ed. Tehran: Soroush, 2000. Vol. 1.
26. Kietzmann C. Aristotle on the definition of what it is to be human, in aristotle's anthropology. Keil G, Kreft N, Edt. UK: Cambridge University Press; 2019, p. 25-43.

27. Wood JN, Glynn DD, Phillips BC, Hauser MD, The perception of rational, goal-directed action in nonhuman primates. *Science*. 2007; 317(5843): 1402-5.
28. Mozaffar MR. Commentary on Mozaffar's logic,¹¹ ed. Qom: daarolelm. 2002, Vol. 1.
29. Mercier D. Elements of logic in: definitions of words and definitions of things. Third^{ed}, New York: The Manhattanville Press; 1912.
30. Santana LH, Garcia-Mijares M. Animal creativity as a function of behavioral innovation and behavior flexibility in problem-solving situations. *Integrative Psychological and Behavioral Science*, 2022; 56(1): 218-33.
31. Adriaense J, Koski S, Huber L, Lamm C. Challenges in the comparative study of empathy and related phenomena in animals. *Neuroscience & Biobehavioral Reviews*. 2020; 112: 62-82.
32. Lilley MK, Kuczaj SA, Yeater DB. Individual differences in nonhuman animals: examining boredom, curiosity, and creativity. *Personality in Nonhuman Animals*. 2017; 257-75.