



The process of forming knowledge: In the study of ontology, epistemology, and axiology

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ABSTRACT

Humans acquire knowledge based on their abilities as beings who think, feel, and sense. Knowledge is the result of knowing, and this occurs after people sense a certain object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste, and touch. Most of human knowledge is obtained through the eyes and ears. The purpose of this study is to describe science from a philosophical view from the perspective of ontology, epistemology, and axiology. Ontology, epistemology, and axiology are the basis for the development of science. Ontology can be defined as the essence of an existence which includes everything that exists. Knowledge comes from one's appreciation and understanding of the situation. Humans as subjects try to express, recognize, and know the objects around them. The object is in the form of reality or facts that function as a stimulus to the awareness possessed by humans. Knowledge is obtained through a cognitive process, where a person must first understand or recognize science to know that knowledge. There are three foundations in knowledge, namely the ontological, epistemological, and axiological foundations.

INTRODUCTION

Humans are essentially creatures created by God who are given all physical, spiritual, and thinking abilities that make humans different from other creatures. Humans are also perfect beings and the first to use language. Humans are distinguished from other creatures by three qualities: their mastery of language, their capacity for thought, and their immaculate physical form. With this privilege, people are given information based on their capacities as beings with thought, feeling, and sensory systems (Yasin et al., 2019).

Human curiosity about anything leads to knowledge when it is pursued using specific techniques and tools. The sorts and aspects of this knowledge vary; some are direct, some indirect, some flexible, subjective, and specialized, and some fixed, objective, and all-encompassing. There is real knowledge and there is false knowledge, and the kind and nature of this knowledge depend on the source and the methods used to acquire it. Of course, having accurate knowledge is desirable. Knowing is the outcome of sensing, which takes place once people become aware of a certain object. The five senses of the human body-sight, hearing, smell, taste, and touch-are used for sensing. Humans learn most things through their eyes and ears (Darsini et al, 2019)

Based on the explanation above, it can be seen that there are many types of knowledge and one of them is science. Science is part of knowledge whose object of study is the empirical world as a determinant of the truth of that knowledge and uses the scientific method to gain knowledge. Deductive and inductive reasoning combine to form the foundation of knowledge. The articulation of human knowledge about the cosmos using a methodical, logical approach is known as science. The existence of three impulses, namely: First, the desire to know, which was created out of the need to survive, is the background to the creation of science. Second, the human desire to fulfill fundamental wants and discover the true order. Third, encouragement concerns the assessment of the reality of human existence itself (Rokhmah, 2021).

Any information that a person possesses is constantly being questioned and evaluated by himself and others. If the answer is that the knowledge he possesses is knowledge of "what" or of what must be known, then the ontology of knowing itself holds the key. The study of epistemology addresses the issue of where to find it or the methodology we will employ to discover and acquire that

knowledge. The subject of what purpose this information serves for people and other living things, including the environment in which humans live, is also referred to as axiological research. Ontology, epistemology, and axiology are the three facets of philosophical thought that are connected. The ontology and axiology of science must also be brought up while discussing science's epistemology. As a result, the ontology of science is connected to the epistemology of science, which is connected to the axiology of science, and so forth. This is because discussing the components of the study of the philosophy of science is founded on a model of systematic thought, necessitating constant linking. The three concepts of ontology, epistemology, and axiology cannot, therefore, be separated from one another (Hanum, 2022).

Finally, the author is interested in discussing it further and put it forth in an article titled "The Process of Forming Knowledge: in the Study of Ontology, Epistemology, and Axiology" based on the explanation that when discussing the philosophy of science, the three aspects of philosophical thinking, namely ontology, epistemology, and axiology, are never separated from each other. Concerning ontology, epistemology, and axiology, this work aims to provide a philosophical description of science. The authors focus on three parts of philosophy that deal with science: ontology, epistemology, and axiology.

METHODS AND MATERIALS

In this article, the author uses the literature review method or conducts studies from various books and other scientific works related to the topic raised, namely related to the Process of the Occurrence of Knowledge: Ontology, Epistemology, and Axiology. This study aims to determine the extent to which topics are related to current developments to produce new knowledge and contribute to a science that can benefit the public.

RESULTS AND DISCUSSIONS

A. Ontology Orientation

Ontology, epistemology, and axiology are the basis for the development of science. Ontology can be defined as the essence of existence, including everything that exists (Rahmadani, 2021). Ontology comes from the Greek, "Ontos" and "Logos". Ontos means "that exists" while Logos means "knowledge". Based on this, ontology is defined as a branch of philosophy that is related to the nature of an existence which includes whether or not something exists (Rokhmah, 2021).

Ontology can be identified as metaphysics. Ontology is a branch of philosophy that deals with the nature of events. In philosophy, ontology is the main thing to discuss because it relates to reality and reality. Rational principles are discussed in ontology so that it is called a theoretical study

of "existence" because it discusses how far curiosity and what one wants to know. In the aspect of life, ontology can be analyzed through the human senses.

The argument about ontology was put forward by Plato with his theory called the theory of Ideas. Plato said that in this universe there must be an idea that is universal and has an eternal nature. This can explain why something we see is changing. Thus, it is a shadow, not an essence. So, something that is seen by the human senses is only a shadow (Rokhmah, 2021).

Ontology schools emerged as a result of several questions related to philosophy. The flow in question is the flow of naturalism, materialism, idealism, and hylomorphism. The four streams are explained in the following discussion: First, Naturalism. Within the scope of naturalism, everything that is real has a natural nature. What is meant by reality is "what is". So, we need to find a clear understanding of what is reality. This flow of naturalism can explain that reality is something that can be studied through an empirical approach to existing elements.

Second, Materialism. Within the realm of materialism, the universe is composed of tiny particles or micro-substances and is also explained in terms of the laws of dynamics. In this era, materialism is related to the formula $E = MC^2$, with E having the authority to exchange with the masses M. The difference between the present and past materialism schools a significant difference. This is evidenced by the rapid scientific developments found in the modern era. The basic provisions used in this flow are material, while the provisions used in the development process are evolution (Tarigan et al. 2022).

Third, Idealism. The flow of idealism comes from the word "idea" which means a thought. It is considered that behind something that is reality, there must be something opposite or invisible. The universe is considered to have continuity with other levels. Humans are spiritual centers and are interconnected with other spiritual levels, so it can be concluded that these levels are also spiritual centers. The state of physical objects will be imperfect and will not lead to a true truth (Nurasa et al. 2022).

Fourth, Hylomorphism. Hylomorphism comes from the Greek "hylo" which means matter and "morph" which means form. The discussion of hylomorphism relates to matter and the nature of forms. An example of an object in humans means that humans consist of material and form that can be captured by the human senses. Everything that has existence must contain an essence, but everything that has essence can be separated from existence. This can be caused because essence does not always have existence although it is unlikely that there is existence without having essence (Tarigan et al. 2022).

The benefits of ontology as a study of philosophy (Zainuddin et al. 2022):

1. Plays a role in developing and advising on various existing systems of thought.
2. Able to solve problems in the pattern of existential and existential relations.
3. Helping to explore the extent of problems in the scientific, ethical, and scientific fields.

The characteristics of ontology include (Burhanuddin, 2018):

1. Ontology is the study of the meaning of "being" and "being", discussing the essential characteristics of what exists in itself, based on its abstract form.
2. Ontology is a branch of philosophy that uses certain categories to discuss the structure and order of reality in as much detail as possible. These categories include being or becoming, potentiality or actuality, appearance or reality, existence or essence, change, perfection, space, and time.
3. Ontology is a branch of philosophy that describes the nature of existence. For example, something that is absolute, eternal, perfect, and something absolute.
4. Ontology is a branch of philosophy that studies a reality or an image, whether it is real or apparent, and so on.

The characteristics of ontology in the field of science include: First, there is the concept of empirical knowledge but there is no concept of revelation. Second, knowledge comes from research. Third, respect guidelines for verification (verification), explanation (explanative), repeatability and openness, questioning radical matters, and other experimental methods. Fourth, knowledge is objective, rational, methodological, systematic, neutral, and observative. Fifth, having concepts related to natural laws that have been verified. Sixth, there are various hypotheses and scientific theories. Seventh, research the form of causality and applied science into technology. Eighth, recognizing concepts and knowledge relative to scientific logic (Rokhmah, 2021).

Ontology has an important role for every human being who wants to expand his knowledge about the universe and the study of empirical sciences such as anthropology, sociology, medicine, physics, engineering, culture, and so on. Ontology is the essence of what is learned or the knowledge itself. Ontology is a theory about the meaning of an object of research or a concept that is related to that knowledge.

B. Epistemological Orientation

The foundation of epistemology describes the discussion of how to realize scientific activities through a method, steps, and activities on knowledge. Epistemology is a theory of knowledge or thought in a branch of philosophy that discusses the structure, origins, validity, dynamics, and methodology of shaping human knowledge. Philosophical epistemology discusses the truth and responsibility of

science. How was that knowledge obtained? What are the criteria for knowledge? How do we achieve actual knowledge? This will be discussed in epistemology because it includes procedures or ways of obtaining knowledge (Cania, 2023).

Epistemology comes from the Greek words "episteme" meaning knowledge, and "logos" which means knowledge or mind. The term episteme comes from the verb episteme which means to place, subdue or place. So literally, episteme can be interpreted as knowledge (Ridlo, 2020).

Epistemology is a branch of philosophy that studies the nature of human knowledge, especially in the following four issues (Junaedi & Wijaya, 2019):

1. Knowledge sources.
2. Knowledge success method.
3. Tool in realizing the achievement of knowledge.
4. Classification of knowledge or limits of knowledge.

Epistemology has a secret behind the "mystery" of understanding or meaning that is difficult to understand. The definition of epistemology is enough to highlight the attention of scientists, with different opinions and points of view. Epistemology is a branch of philosophy related to the scope of knowledge and the nature of knowledge. The epistemological foundation of science is reflected in the scientific method. In essence, the scientific method is a way of compiling or obtaining knowledge based on a logical frame of mind, understanding hypotheses from that frame of mind, and carrying out hypothesis verification.

The relationship between epistemology and other sciences (Hanum, 2022):

1. The relationship between epistemology and logic
Logic is a science that studies the correct method of thinking, namely the method used by the mind to understand external realities such as justification and description.
2. The relationship between epistemology and philosophy
Philosophy is a discussion of existence or ontology, external reality, and the nature of existence, while philosophy (metaphysics) is a discussion of existence in general principles. From these two philosophical notions, it has been assumed as nature, the validity of reason in understanding reality, and an ability.
3. The relationship between epistemology and the Science of Interpretation and Theology

Theology is a science that discusses the propositions and the preparation of arguments in defending religion and its role. While the science of interpretation is a science related to the method of interpretation of the scriptures. So, epistemology has an important role for both sciences because the end of this discussion will be directly related to epistemology.

C. Axiological Orientation

Axiology is a branch of philosophy that discusses how to use it. As we know that science can provide convenience and prosperity for humans. This proves that axiology plays an important role in the process of developing science. Axiology comes from the Greek word "axim" which means value. The axiological value relates to whether or not is appropriate, good or bad, whether knowledge is appropriate or not (Rokhmah, 2021).

Axiology is the study of norms or values. These values can be related to everyday life such as good and bad, fair or unfair, right or wrong. Axiology is the knowledge that traces the nature of a value in terms of philosophy. From the definitions above, it can be concluded that the main problem in axiology is value. Values in philosophy refer to ethical and aesthetic issues. Ethics is related to human behavior in terms of whether it is good or not in a condition related to norms. Meanwhile, aesthetics relates to the value of beauty related to the environment and the phenomena around it (Mayasari et al. 2022).

The development of human life is closely related to axiology, including first, the object of study can be chosen ethically without changing human nature, not demeaning fellow humans, and not interfering with values that are power, dogmatic, and political needs. Second, assisting in the scientific process so that absolute truth can be created with honesty and not oriented to personal interests. Third, the standard of living can be improved through the development of knowledge by paying attention to human dignity and nature or the preservation of nature related to the universal discovery and use of science (Rokhmah, 2021).

Axiology describes two things, namely the way of philosophy in solving problems and the usefulness of philosophy. Knowledge is important for humans because with knowledge humans can fulfill their needs and requirements easily and quickly. Knowledge can be said as a means to achieve life goals. The use of philosophy can be known by looking at three things, namely philosophy can be a method of solving problems, as a way of life, and as a collection of theories (Situmeang, 2021).

The Process of Forming Knowledge

Knowledge is a process of human effort to know so that with knowledge humans can give correct decisions/truths and certainty to live the lives of each individual.

The Nature of Knowledge

Knowledge is an inseparable part of human life. Aristotle stated that by nature humans have the desire to know so knowledge activities are activities to fulfill human nature. Knowledge is a process of questioning reality by people who have awareness. Knowledge is also a result or product. Epistemology is the basis for acquiring knowledge. Most people only act as connoisseurs of knowledge results.

Never questioned where it came from and how the process of the birth of this knowledge. This pragmatic human attitude makes the level of knowledge that most people have shallow and not deep.

Knowledge comes from one's appreciation and understanding of the situation. Humans as subjects try to express, recognize, and know the objects around them. The object is in the form of reality or facts that function as a stimulus to the awareness possessed by humans. Awareness is the process of processing the stimulus that arises from the object you want to know. Awareness plays an important role in the occurrence of knowledge. Consciousness is a human activity that is psychological in nature, the result of the interaction of reason, feeling and will in a balanced and dynamic manner. Consciousness functions as a processor of perceived results from objects encountered in the process or act of knowing. If someone perceives an object without awareness, then the object is only passing and does not produce knowledge for the subject, awareness becomes the determinant of the content of knowledge that is processed by the subject so that the knowledge becomes meaningful (Yulika, 2017).

Understanding and expressing the nature of knowledge properly is also closely related to how the knowledge process begins. This means that knowledge will emerge if there is a concept of knowledge. The concept of knowledge occurs because there are several variations of different ways of expression. Every human being in general can express his thoughts through statements that appear and at the same time know them. The concept of knowledge has 3 kinds of knowing, namely knowing how, knowing who, where, which, and knowing about something because of the other (Yulika, 2017).



Figure 1. Awareness of forming knowledge

Source of Knowledge

Knowledge is obtained through a cognitive process, where a person must first understand or recognize science to know that knowledge. There are six important things as a tool to find out the occurrence of knowledge. These six things include (Darsini et al., 2019):

1. Sense-experience

Sensual experience is seen as the most vital means of acquiring knowledge. Precisely through the senses, we can relate to various kinds of objects outside of us. This strong emphasis on reality is known as realism (only a fact or something that has become a fact can be known. Errors can occur when there is disharmony in all sensory equipment.

2. Reasoning

Reasoning is the work of reason that combines two or more thoughts to acquire new knowledge. For this reason, it is very necessary to study principles of thought such as the principle of identity or the principle of similarity in the sense that something must be the same as itself ($A=A$). Principium contradictionis or the principle of contradiction. If two opinions are contradictory, both of them can't be true at the same time, or in the same subject there cannot be two contradicting predicates at one time. And the principium tertii exclusionis (the principle of no third possibility). Two opposing opinions cannot be both right and wrong. The truth is only found in one of the two and there is no need for a third opinion or possibility.

Rational Knowledge is the knowledge that is obtained by rational or rational training alone, not accompanied by observation of factual events. For example, heat is measured by degrees of heat, weight is measured by scales, and distance is measured by a meter.

3. Authority

Authority is a person's authority or legitimate power and is recognized by his group. He is seen as a source of knowledge because his group knows someone who has authority over his knowledge. Therefore, this knowledge no longer needs to be tested because of that person's authority.

4. Intuition (Intuition)

Intuition is the ability that exists within humans (psychological processes) to perceive something or make statements in the form of knowledge. Intuitive Knowledge is obtained by humans from within themselves when they experience something. To obtain high intuitiveness, humans must strive through consistent thinking and contemplation of a particular object. Intuitive in general is a method for acquiring knowledge not based on rational reasoning, experience, and sensory observation. For example, the discussion about justice. The definition of fair will be different depending on the human mind that understands. Fair has many definitions this is where intuition comes into play.

5. Revelation

Revelation is knowledge obtained from the divine through His prophets and messengers for the benefit of His people. The basis of knowledge is belief in something conveyed by

the source of revelation itself. From this belief arises what is called the Revealed Knowledge belief which is obtained by humans based on revelations given to them by God. Revelation knowledge is external, meaning that knowledge comes from outside humans. Revelation knowledge places more emphasis on belief.

6. Faith

Belief produces what is called faith or belief. This belief bases itself on religious teachings which are expressed through religious norms and rules. Confidence is also seen as a psychological ability which is the maturation of belief. Beliefs are generally dynamic and able to adapt to context, whereas beliefs are generally static.

Knowledge Acquisition Methods

One individual with another individual has their method of obtaining useful knowledge. Some of the methods used to gain knowledge can be classified (Timotius, 2017):

1. Rationalism

Rationalism is a school of thought that holds that true knowledge relies on reason and this forms the basis of scientific knowledge. They despise knowledge obtained through the senses not in the sense of rejecting the value of experience and seeing experience as a stimulus for the mind or mind. Truth and error are in our minds and not in things that can be absorbed by our senses

2. Empiricism

For the empiricist philosopher, the only source of knowledge is experience and sensory observation. Data and facts captured by the five human senses are a source of knowledge. All true ideas come from this fact. Therefore, all human knowledge is empirical

3. Criticism

Three kinds of knowledge, first, is analytical knowledge, where the predicate is included in the subject or the predicate is known through two subject analyses. For example, the circle is round. Second, knowledge synthesis is a posteriori, in which the predicate is related to the subject based on sensory experience. For example, it has been raining today, as a result of sensory observation. In other words, after making my observations, I said $S = P$. Third, a priori synthetic knowledge, which confirms that reason and sensory experience are needed simultaneously. The exact sciences as well as the natural sciences are synthetic a priori

4. Positivism

Positivism always stems from what is known, which is factual and positive. All that is known positively is all the symptoms or something that appears. Therefore, they

reject metaphysics. What is most important is knowledge of reality and investigating the relationships between facts to be able to predict what will happen in the future, rather than studying the nature or meaning of all those facts. The main figure of positivism is August Comte. He divided the development of human thought into three stages, namely the theological stage, the metaphysical stage, and the scientific (positive) stage.

Knowledge Adoption Process

The process of adopting behavior that originates from knowledge, that is, before a person adopts a new behavior, several processes occur within that person, including (Darsini et al., 2019):

1. Awareness, namely at this stage the individual is aware that a stimulus or stimulation is coming to him.
2. Interest, namely the individual begins to be interested in the stimulus.
3. Evaluation or considering where the individual will consider whether the stimulus is good or not for him. This is what causes individual attitudes to be better.
4. Trial, namely where individuals begin to try new behaviors.
5. Adaptation, namely the individual has had a new behavior by his knowledge, attitude, and awareness of the stimulus.

CONCLUSIONS

Knowledge is a process of human effort to know so that with knowledge humans can give correct decisions/truths and certainty to live the lives of each individual. There are three foundations in knowledge, namely the ontological basis which analyzes material objects from science in the form of empirical objects. Then the epistemological basis analyzes the process of compiling science through the process of the scientific method. As well as the axiological basis that analyzes the application of scientific findings aimed at facilitating the fulfillment of needs for the sake of human survival.

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Author's Contribution

All authors reviewed the results and contributed in full from the beginning to the final manuscript.

Conflict of Interest

All Authors have no conflict of interest and are able to work professionally.

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