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Critical Breakthrough to Overcome Chaos in Metaphysical, Theological, and Scientific Viewpoints

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Abstract

This article examines critical breakthroughs to overcome chaos in metaphysical, theological, and scientific viewpoints. This chaos often arises due to differences in paradigms in understanding reality, truth, and the relationship between science, theological beliefs, and metaphysical reflection. Through an analytical and integrative approach, this article examines the potential for harmony between viewpoints by utilizing interdisciplinary theories, such as critical epistemology and the philosophy of reconciliation. The results of the study show that collaboration between disciplines can be an effective solution in bridging the gap in thinking that has been a major challenge. This article offers a new conceptual framework to build a productive and complementary dialogue between the three domains, thus paving the way for a more comprehensive and inclusive understanding. Conclusion implications of the rejection of epistemological and methodological pluralism broaden the anarchic behavior of intellectuals in the Vienna Circle who reject metaphysical-theological arguments in all their manifestations in the fields of literature, philosophy, theology, and anything that is packaged a priori as a meaningless, nonsense, and unvalidated (proven) statement. This is the form of epistemological and methodological anarchism that is opposed by contemporary scientists such as Kuhn, Popper, Feyerabend, Lakatos, Lyotard, Rorty, Barthes, and Habermas.

Keywords: *Metaphysics, Theology, Science, Critical Epistemology, Reconciliation, Paradigm, Interdisciplinary Dialogue.*

Introduction

Logical positivism or logical empiricism is the background of this study. Logical positivism or empiricism establishes the source of knowledge (epistemology) and the way to obtain knowledge (methodology) in a way that firmly excludes science from metaphysics and theology, art, literature, fiction, etc., while also unknowingly becoming a movement to end the life of science itself [1]. Imagination, hope, and ideals are values that are understood to be important as reasons to fight for life and the future, including the life and future of science [2]. The truth of knowledge according to logical positivism or logical empiricism is value-free, so eliminating the value of its struggle to maintain the existence and sustainability of science not only excludes metaphysics and theology from the realm of science but is also an unconscious choice that executes the "death" of life and the sustainability of science. In Knowledge and Human Interests, the author of this book discusses how the development of natural science and modern human science cannot be separated [3]. In other words, interests are values that are inherent in every scientific endeavor and work, including logical empiricism or positivism, which claims that empirical scientific endeavors are value-free [4].

This research is concerned with the unclear understanding of epistemology and methodology as

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shown by Poespowardojo and Seran in their book entitled Philosophy of Science: The Nature of Science and Criticism of the Vision of Logical Positivism and its Implications (2021) [5]. The book shows that the unclear understanding of epistemology and methodology causes acute chaos in the comparison of reason, which is true and worthy of being studied from the comparison of claims that eliminate each other [6]. The chaos of perspectives demands clarification and distinction of the diversity of sources of knowledge (epistemology) and how to obtain the truth of knowledge (methodology). Accepting and acknowledging the diversity of perspectives regarding sources of knowledge and how to produce true knowledge prevents scientists from falling into the abyss of narrow-minded anarchism due to misunderstandings regarding epistemology and methodology that are used blindly [7].

From the problems above, the questions for this research can be formulated: how does the chaos of perspectives occur so that metaphysics, theology, and science are juxtaposed with each other as opponents in defending the epistemological and methodological perspectives, as if the strong wins? How to make a critical breakthrough in overcoming the anarchism of perspectives by allowing metaphysics, theology, and science to live in a climate of pluralism inclusively?

By exploring the development of epistemology and methodology in its history, research is useful for maintaining the variety of epistemological and methodological pluralism that begins with myth, moves to logos, and then returns to myth. The meaning of myth was originally a hereditary story and was accepted without questioning its truth, shifting to logos as an effort to interpret the world and the phenomena in it rationally, systematically, and logically. The transition from myth to logos does not mean that myth is extinct from the treasury of meaning and cultural values that are accepted and live in society. The world and the phenomena in it are understood from denotative and connotative meanings, then forming a shared understanding into a "myth" at a higher level of meaning as a cultural value that is understood, accepted, and lives in society [8]. The process of meaning develops along with the development of society, so claims of knowledge cannot be exclusive and anarchic because it will kill the development of science and narrow its perspective and make the strong dominate the weak. By accepting epistemological and methodological pluralism, scientists are helped not to simply rationalize myths in their pluralistic manifestations because myths are the starting point for scientific reflection to strengthen what is today claimed as science. The development of science begins from myth to logos and returns to myth in a more comprehensive understanding. With that, scientists are enriched with epistemological and methodological perspectives in their plural forms: metaphysics, theology, and science. In other words, an inclusive understanding of epistemology and scientific methodology opens up space to advance human civilization democratically and complement each other.

Immanuel Kant's (1724-1804) criticism is a style of thought that emerged as an effort to fight logocentric dogmatism in the name of reason alone, from Descartes, and experience alone from Hume. For Kant, rational knowledge is the construction of reason on a posteriori experience (the world and its symptoms as phenomena) through a priori categories (quantity, quality, modality, and relation) and produces knowledge that is claimed to be true and false [9]. In this way, Kant wanted to bridge the differences between the two schools of rationalism and empiricism to create a unique and influential philosophical view as a synthesis. According to Kant, what can be known and claimed to be true is only what is constructed by reason from the phenomenal world, because what is claimed to be the essence of reality is the noumenal world that no one is competent to know. With this, Kant rejected traditional metaphysics that are dogmatic in idealism, realism, rationalism, and empiricism. For Kant, the theory of knowledge can only be

presented philosophically as a synthesis of a priori knowledge and a posteriori experience. According to Kant, what can be known and can be claimed to be true or false is only phenomena (symptoms that appear in the human senses to capture them) and noumena (essence), which are not visible in sensory experience and cannot be known.

The previous research has been done by Poespowardojo & Seran (2021) [10]. In their work, Philosophy of Science: The Essence of Science and Criticism of the Vision of Logical Positivism, Poespowardojo and Seran critique logical positivism and its rejection of metaphysical-theological arguments, offering an epistemological analysis. They argue that the rejection of methodological pluralism in logical positivism has led to chaos in the comparison of scientific, metaphysical, and theological viewpoints. The study suggests that epistemology should embrace pluralism to overcome this chaos, advocating for an integrative approach that allows science, metaphysics, and theology to coexist productively. This is different from your study, which focuses more on metaphysical reflection and theological perspectives, not necessarily advocating for a direct synthesis or critique of logical positivism but exploring how the three domains can coexist through interdisciplinary dialogue.

Habermas (2015) [4] Knowledge and Human Interests by Jürgen Habermas addresses the relationship between epistemology, methodology, and human interests. Habermas critiques positivist approaches by emphasizing that knowledge production is inherently shaped by human interests, thus challenging the neutrality of science. He advocates for a critical theory approach to understand how knowledge creation is influenced by societal needs and values. Unlike your study, which calls for reconciling diverse perspectives on knowledge, Habermas highlights how scientific methods are often influenced by societal interests, suggesting a critical reflection on the methodology's role in shaping knowledge.

This study aims to clarify and distinguish epistemology and methodology in scientific work. Epistemology helps us understand the sources of knowledge and how to validate the truth of different knowledge. A proper understanding of what epistemology is helps scientists sort and choose appropriate procedures in producing true knowledge. So, epistemology and methodology are closely related in scientific research. Epistemology discusses the nature, origins, and limitations of human knowledge, such as what humans can know and how we know that what we know is true. Epistemology helps us understand how to gain knowledge from objects of thought through methodology.

Method

Methodology etymologically comes from two words: method, which means way, and logos, which means knowledge. So, methodology is knowledge about how to explain research problems by answering research questions that can lead researchers to achieve goals by showing the benefits of their research.

An important thing related to research methodology is the paradigm. A paradigm is a system of beliefs, ideas, values, or habits that form the basis of a researcher's way of thinking about the world. A research paradigm helps researchers form a research philosophy: how research is designed (not only to achieve the intent and purpose of the research but also to ensure that the research results are reliable and valid). Therefore, choosing a research paradigm is very important because the paradigm provides a logical structure for conducting research, and improving the quality of the research work can be followed correctly.

There are three pillars of the paradigm (ontology, epistemology, and methodology/axiology) that

are important to understand before determining which paradigm to use. Ontology is the main pillar of research because it is related to the question of what (reality) will be studied. Ontology is knowledge about existence: what to study. What to examine. Epistemology is the second pillar in research, namely, what can be collected as a source of knowledge about what is being researched. Methodology or axiology is the third pillar in research, namely, the creation of a research design to investigate, measure, and analyze the intent and purpose of the research.

By understanding the three pillars of the paradigm above, it is easier for researchers to sort and choose the type of paradigm that will be used as a comprehensive research guide. Generally, four research paradigms are known (positivist, interpretive, critical theory, and constructivist) and can be developed as derivatives of the four paradigms above. The positivist paradigm assumes that reality is objective so that researchers can know that reality and describe and explain it accurately. Because reality is objective, researchers can compare what is claimed to be the object of their research and ensure its truth. Researchers are limited in collecting data and interpreting it from an objective point of view. As a result, positivists usually use quantitative methods in their research (eg, statistics, social surveys, and structured questionnaires). This research paradigm is widely used in the natural sciences, physics, and research that uses large sample sizes.

The interpretive paradigm explains that everyone experiences and understands a reality in different ways and interprets it based on their respective views. Interpretivists also believe that all research is influenced and shaped by the worldviews and theories of existing researchers. As a result, interpretivists use qualitative methods and techniques to conduct their research. This includes interviews, focus groups, observation of a phenomenon, or gathering documentation about a phenomenon (e.g., newspaper articles, reports, or information from websites).

The critical theory paradigm asserts that social science can never be 100% objective and value-free. This paradigm focuses on the scientific inquiry into social change. Critical theorists question knowledge, procedures, and how power is used (or abused) in the phenomena or systems they are investigating. Researchers using this paradigm often aim to create a more just and egalitarian society that guarantees individual and collective freedom. Both quantitative and qualitative methods can be used with this paradigm.

The constructivist paradigm asserts that reality is a construction of the human mind. That is, reality is subjective. Constructivists believe that all knowledge comes from our experiences and our reflections on those experiences. Scientists using this paradigm generally oppose the idea that there is a single methodology for producing knowledge. Therefore, qualitative methods are considered more appropriate because they focus on the experiences of participants and the subjectivity of the researcher.

Which paradigm should be chosen? The choice of paradigm varies depending on the direction that will determine the direction of the research, the findings, and the results of the research. Therefore, researchers need to identify the research problem, the research objectives (and hypotheses) proposed, so that they can help researchers determine the path they need to take and what they want to achieve or understand from their research.

Results and Discussions

The phenomenon of chaos in metaphysical, theological, and scientific perspectives is briefly discussed to formulate the results of this study.

1. Works of Ancient Greek Natural Philosophers

Logos as a reflection of reason replaces (not eliminates) myth to explain reality rationally, systematically, and logically. Thales made a rational, systematic, and logical explanation by asking and proving that the origin of the world and the phenomena in it are water. Water is the basic substance (*Arkhé*) of all living and dead things [11]. Through critical reasoning, stories or beliefs that were previously accepted without proof are now changed by accepting *Arkhé* based on reason and proof. *Arkhé* is accepted by natural philosophers, but they differ regarding the entity of existence or the basic substance of reality. The differences are juxtaposed in the journey of science as a manifestation of pluralism of perspectives, so that there is no anarchic co-optation of one perspective. Aristotle emphasized Thales' position, in his book entitled Metaphysics, especially Book I, as the first philosopher who began the rational, systematic, and logical proof of the world and the phenomena (2001).

2. Classical Greek Philosophers

After the period of natural philosophers in Ancient Greece, the perspectives of Socrates and the sophists (clever minds) marked the game of science in Classical Greece. During this period, education was considered important and determined the quality of human life for citizens in the state. The sophists trained technical skills in rhetoric and mathematics to create quality citizens in the state for the advancement of culture, economy, and politics [12]. Socrates emphasized the importance of character in citizen education to appreciate the state as the basic substance and support of each person's life as a citizen. Without a state, no one lives properly as a human being because, for Socrates, humans are zoon politikon. Only in the state are all people as citizens, worthy as human beings, to achieve their life goals. Plato was a student of Socrates who immortalized the teacher's teachings in his work, the Republic, that the state is the nature of human existence as rational and social beings [13]. The struggle to realize the ideal state is a natural obligation, so even though there are weaknesses in the political system in presenting a real state, it does not mean that there is no good state that exists in the ideal world. The weaknesses of the political system that are seen through the practices of oppression and corruption do not eliminate the ideal state unless it is an imitation and an imperfect appearance in the experience of what is due to human weaknesses [14].

Reflecting on the experience of oppressive and corrupt political systems, Socrates' students doubted his teachings about the state in an ideal world. Through questions and answers or dialogue between Socrates and his students, Socrates asserted that the ideal state is the real as the origin of the political system that supports citizens in achieving their life goals. Even if the state in the (appearance) of sensory experience does not reflect what is truly real and perfect in the world of ideas, it does not mean that what is aspired to as a good state does not exist. Monarchy, democracy, tyranny, etc., are political systems in the experience of the state to present the state in an ideal world. Therefore, according to Plato, even if the form of the state that appears in a certain political system does not reflect the true ideal state, it does not mean that the aspired state does not exist but rather that the political system has failed to present the ideal state in an adequate way (Plato, Republic, 2002). Book VI of the Republic discusses the conditions for the realization of the state that must be met in the political system so that the realization of the ideal state can occur. These requirements include the leader of the country being a wise person: a qualified thinker or philosopher to carry out leadership duties as a king in harmonious cooperation with all citizens, so that the country is present as the achievement of the goals of the citizens' lives. Leaders, as conveyed by Socrates, rarely exist just like that, so leaders must have

enlightenment by reason, like the light of the sun that allows the eyes to see (Plato, Republic, 2002).

Unlike his teacher Plato, Aristotle builds metaphysical arguments through a political system that is chosen rationally, systematically, and logically. Although Aristotle's metaphysical arguments in Politics are different from Plato's in the Republic, both talk about one thing: a good country is real in the realization of the goals of human life as citizens in a good country. Plato sees the country from the level of the ideal world, while Aristotle from the level of the world of experience. Through abstraction (over the world of experience), we can achieve the ideal whose universality can be understood.

In Politics, Aristotle is interested in moderate democracy as a synthesis between monarchy and democracy. A monarchy alone can perpetuate authoritarianism. On the other hand, democracy alone generalizes agreement according to the practice of majority rules can result in harm, as the death penalty for Socrates. According to Aristotle, realism is a reason not to discard Plato's idealism stated in the Republic, but rather to direct the political system as (good governance), the implementation of public interest. Because monarchy and democracy can contribute and complement each other in political practice, moderate democracy is a choice that does not perpetuate power in one hand and decision making regarding public interest must not ignore public agreement.

Works of Medieval Philosophers

St. Augustine was a Medieval intellectual (5th-15th century AD) who used metaphysical arguments in discussing faith from a Catholic theological perspective. Augustine emphasized that faith precedes rational understanding (fides quarens intellectum). This means that before we fully understand something in research, we must have a belief based on faith. According to him, there is a priority of faith (theology) over science. The search for knowledge aims to strengthen faith, so the teachings of Medieval philosophy encourage humans to seek a deeper understanding of faith beliefs, so that information provided through science and technology can help someone understand why they believe in God. This principle invites humans to ask questions and seek answers with an attitude of not being afraid to face doubts because understanding will follow faith (Copleston, vol.2, 1993).

The balance of faith and reason is that both complement each other. Faith provides a foundation, while reason helps someone understand their faith better. Faith should not be separated from reason [15]. “Fides quaerens intellectum” means having an active and open faith that helps in understanding science more deeply. St. Thomas Aquinas was a 13th-century AD philosopher who tried to develop philosophy to underlie theological arguments about the relationship between the existence of God as creator and everything else as His creation. So, God is the principle of existence, which is not created (as a result) but exists from itself (ipsum esse subsistens). God, in the logic of causal relationships, is the cause or the first principle of existence (prima causa) because God exists from Himself. Through theological arguments based on metaphysical knowledge, philosophy is interpreted as a means to serve (servant) theology (philosophia est ancilla theologiae). The development of theological concepts with strong metaphysical arguments brought the concentration of European education and science in the Middle Ages into a medium for strengthening religious dogma and the power of the Catholic Church in Europe. What then happened as a result of the theological-metaphysical argument was to expand Christianity in society, while science was hampered by feudalism and the influence of the church. As a result, the late Middle Ages were a complex period of conflict and change

that affected Europe at that time. The spiritual and moral power that lay in the strong Roman Catholic Church resulted in the doctrine of the power of strong religious leaders and the authority to regulate the spiritual life of the people. The church also taught morality and regulated social norms, including marriage, business ethics, and justice. Church leaders, including the Pope, had great influence over rulers and kings. However, the role of the church was also considered controversial because, in addition to the role of the church as a moral pillar, there was also corruption and oppression by certain rulers in the church (Copleston, vol.2, 1993).

The Works of Renaissance Philosophers

The burden (burden of metaphysical-theological reasoning from the Middle Ages encouraged the creation of another path, known as the via moderna, namely the path of renewal of metaphysical-theological arguments that dominated the scientific practice of the Middle Ages. However, the Renaissance, as the rebirth of Greek culture in a transitional period, could not be separated from its shell, ontology, epistemology, and methodology of medieval science. The new humanist path encouraged simplicity of thought known as parsimony and simpliciter. Parsimony and simpliciter are the simple nature of reason in revealing knowledge about reality in the world. Parsimony and simpliciter are the humanistic desires of Renaissance scientists to build a new way of understanding and practicing humanistic science (Copleston, vol.3, 1993).

The Renaissance movement emphasized the value of human dignity above all else. Renaissance figures gave birth to freedom of expression in art, calls for reform in the church, secularism, and even atheism, rationalism, and individualism. The theocentrism of the Middle Ages that dominated European thought, with the Catholic Church as the main authority, was gradually questioned with the aim of renewal or reform. Humanist figures in the Renaissance considered human freedom to be above all else. W. Ockham (1287-1347) fought for a new path, simplifying the understanding of science by distinguishing between scientia realis and scientia rationalis. Scientia realis is related to concrete objects that can be directly known. In contrast, scientia rationalis is not directly related to concrete objects that are directly known. Regarding scientia rationalis, logic helps us to clarify and distinguish so that something that previously could not be known directly can be known by analyzing species and genus. Scientia realis is direct knowledge of objects, while scientia rationalis is a concept. Therefore, speculative metaphysical-theological arguments do not need to be forced to understand physical (material) objects in the realm of scientia realis because they will obscure rather than explain. Metaphysical-theological arguments are needed if the object of scientia rationalis is related to the concept (Copleston, vol.3, 1993). Ockham is widely known for introducing nominalism as a new path, via moderna, in facing the harshness of Aristotelian realism in the Middle Ages (Copleston, vol.3, 1993).

Nominalism opposes the equating of concepts with reality. According to Ockham, there must be clarification and distinction between scientia realis and scientia rationalis so that people are not mistaken and end up equating concepts with objects. Generalizing concepts in interpreting objects is a misunderstanding. Concepts are ideas and not objects that are conceived (Copleston, vol.3., 1993).

5. Works of Modern Philosophers

Modernism is marked by a dispute over reason regarding knowledge that is claimed to be true based on reason (a priori) or experience (a posteriori). These are the two schools of thought that color the history of modernism: rationalism and empiricism, which refute each other. Rationalism claims that knowledge is obtained through reason and logic. The main supporter of

this school is René Descartes, who postulates that the existence of reality does not lie in material objects experienced through the senses but in the mind: cogito ergo sum (Copleston, vol.4, 1994).

For Descartes, thought precedes what is real in sensory experience. I know that I exist only because I have thought about it first. Rationalists believe that rational reason can explain how the world and reality work. The statement above is not a hypothesis but is claimed as a categorical truth. Rationalism emphasizes that the source of knowledge is human reason/mind/ratio. The method used to obtain knowledge is to think using the rules of logic. For rationalists, mathematics and logic are examples of sciences that produce truth. In contrast to British scientists such as Thomas Hobbes, John Locke, Isaac Newton, G. Berkeley, who were strongly influenced by the idea that knowledge comes from experience (Copleston, vol.5, 1994). David Hume is the originator of empiricism, which is contrary to Descartes' rationalist thinking. In the empiricist perspective, sensory experience as a source of knowledge can be obtained through experimentation, observation, and induction. Empiricists believe that there must be empirical evidence behind every knowledge. Empiricism is related to experience and association. So, rationalism emphasizes reason as a source of knowledge, while empiricism relies on experience as a source of knowledge. Empiricism believes that knowledge comes from sensory experience, and the method for gaining knowledge is to explore experience through experimentation, observation, and induction. Natural sciences, such as physics and biology, rely on this empirical method. In his work, Inquiry concerning Human Understanding, Hume distinguishes two types of humans based on how they strive for and gain knowledge. The first type of human is those who view knowledge as a reasoning that empowers humans with enlightenment of reason. The second type is those who actively inspire humans to take quality and useful actions. The first type of human is speculative and produces abstract types of knowledge. The second type of human is accuracy and problem-solving. The type of human who thinks accurately and can solve problems reaches its peak in the way of thinking of logical positivism or logical empiricism.

Immanuel Kant (1724-1804) was a German philosopher who was beset by a prolonged conflict between rationalism and empiricism that continued during the French Enlightenment (with the famous intellectual J.J. Rousseau) and the German Enlightenment (with famous intellectuals such as Christian Thomasius, Christian Wolff, Reimarius, Mendelsohn, Lessing, and others (Copleston, vol.6, 1994). According to Kant, the chaos of perspectives that arose in modernism, namely, the conflict between rationalism and empiricism, brought with it the conflict between idealism and realism in the Middle Ages and was thought to be the source of the conflict between metaphysical-theological arguments versus empirical scientific arguments. In his two books, the Critique of Pure Reason and the Prolegomena to Any Future of Metaphysics (Copleston, vol.6, 1994). Kant attempted to overcome the chaos of rationalist perspectives. Metaphysical-theological vs empirical perspective that has developed far in early modernism. The question is not whether metaphysics still exists in scientific discourse but whether metaphysics can contribute to the achievement of scientific progress through a priori speculation (Copleston, vol.6,1994). According to Kant, the most fundamental problem in metaphysics for the development of science as the truth about reality lies in the a priori concept: God, freedom, and immortality, even though no one can convince us of this with metaphysical-theological arguments, as well as empirical proof. The concepts of God, freedom, and immortality are postulates that must be accepted for granted so that scientific discourse can proceed. According to Kant, metaphysics, theology, and science do not provide a guarantee that by providing

evidence of the essence of God, freedom, and the immortality of the human soul. Kant doubts that essence (noumenon) can be known through metaphysical or empirical arguments. What humans can know is sensory experience (phenomenon). However, phenomena cannot be known simply a posteriori unless constructed by reason through categories (quantity, quality, modality, and relation) that are a priori. So, what can be accepted as rational knowledge is the construction of reason as a synthesis between a priori knowledge and a posteriori experience, as rational knowledge that can be accepted or refuted. Kant did not doubt the importance of metaphysical arguments, but the current situation must be overcome by building a new understanding of metaphysics. Mathematics and natural sciences have developed so far and provide certainty, while metaphysics remains in a speculative position and doubts everything. Metaphysics does not provide solutions to the problems of science as science does. In the Critique of Pure Reason, Kant argues that the fulfillment of empirical requirements in scientific research allows the achievement of true knowledge. Therefore, it is not a priori or a posteriori statements but a priori synthesis as rational knowledge.

Kant tried to create a synthesis that reconciles rationalism and empiricism through the enlightenment of critical reason, which he called Sapere Aude. The call of Sapere Aude is an invitation to think for oneself and release the ideological-dogmatic bonds in the reason of idealism vs realism as well as rationalism vs empiricism, in a new perspective that goes beyond both, namely, criticism. Criticism is a consideration to bridge the a priori (in rationalism) and a posteriori (in empiricism) contradictions into an a priori synthesis. What is claimed to be true as rational knowledge can be accounted for through the construction of reason (a priori) on sensory experience (a posteriori) through categories (quantity, quality, modality, and relation) in reason into rational knowledge. Only phenomena are symptoms that appear in sensory experience and can be known, while noumena, or the essence of reality (das Ding an sich), cannot be known. Kant tried to combine the advantages of rationalism and empiricism and asserted that criticism lies in a balanced and adequate appreciation of the truth of science that is based on reason (a priori) and sensory experience of phenomena (a posteriori). Thus, Kant found a middle ground between these two schools (Copleston, vol.6, 1994).

Philosophers of Logical Positivism

Kantian criticism is a thought that gave birth to phenomenalism, positivism/empiricism, and culminated in logical positivism or logical empiricism. In its development, positivism or empiricism by the Vienna Circle scientists firmly rejected the synthesis that Kant attempted to bridge rationalism and empiricism. The Vienna Circle scientists saw Kant silencing traditional metaphysics and giving birth to a metaphysics that considered reason and experience as a synthesis to obtain rational knowledge claims. The Vienna Circle scientists rejected Kant and said that what can be accepted as scientific knowledge is only an empirical object of research, which can be proven logically in mathematical language.

In logical positivism, everything that is not apparent in experience cannot be proven and thus cannot be claimed to be true or false. The logical positivism perspective emphasizes the proof of the existence of something by providing strict empirical criteria. So, for logical positivism, a statement is accepted as true only if the statement can be verified empirically. Logical positivism views literature and metaphysics skeptically and even considers it nonsense.

The belief in empirical science is growing among natural scientists, including social scientists. The postulates of science that are built a priori are doubted as universal laws of reason. Thus, generalization is considered the most convincing way to formulate universal laws that are a

posteriori (Poespowardojo and Seran, 2021).

As a result of the anarchism of the epistemology and methodology of logical positivism or logical empiricism, philosophy is considered a science that is unable to show its role and function in providing enlightenment of reason with critical thinking patterns and reflective rational enlightenment. In this situation, philosophical, metaphysical, and theological arguments are increasingly influenced by the way of thinking of logical positivism or logical empiricism. The assessment of logical positivism or logical empiricism towards the epistemology and methodology of philosophy-metaphysics-theology is getting dimmer for two reasons. First, according to logical positivism, the confusion in natural language (spontaneous) in philosophy assumes that thinking comes from itself as if knowledge starts from nothing to being, or comes from metaphysical sources, namely being in itself (ipsum esse subsistens). According to logical positivism, there is no metaphysical source that empirically proves the source of knowledge, except empirical experience as a fact. What is called knowledge in metaphysics is nothing more than a priori conclusions or mere thoughts. Second, the error in Kantian epistemology that underlies early positivism is a synthetic a priori statement without reference to empirical reality or experience (a posteriori). As a result, logical positivism or logical empiricism considers Kant's synthetic a priori knowledge not to explain what is a fact outside of free will or subject determination. Logical positivism understands positivism differently from Kant (a priori synthetic), namely a posteriori synthetic (empirical experience and empirical experience are united a posteriori into empirical Discussion on Critical Breakthroughs in Today's Scientific Practice.

Karl Popper (1902-1994), in his work The Logic of Scientific Discovery, proposed the concept of falsification as a criterion for the demarcation of science. According to him, scientific theories must be testable by submitting refutations (negations/falsifications) so that the conclusions or claims made can be tested. Conclusions that pass refutations against them will become statements of higher quality or corroboration, so that they are strong and enduring even though they do not rule out the possibility of being wrong and being improved. Thus, logical positivism or logical empiricism proposes an epistemology and methodology that emphasizes verification of experience as the truth of knowledge must be doubted, anarchic, and dogmatic (FIP, 71-96).

Thomas Kuhn (1922-1926) in his book The Structure of Scientific Revolutions emphasized methodological pluralism as an understanding of the paradigm shift of the divorce of scientific truth. Kuhn's thinking is a rebellion against the positivist paradigm. He put forward the concept of paradigm as a central concept in the history and philosophy of science. Thomas Kuhn talks about paradigm shift as a context for understanding texts, so critical cooperation becomes important to reach a rational agreement, not to stop differences but to encourage discoveries that are more qualified, synthetic, and solution-oriented (T. Kuhn, 139-157; TK, 97-110)

Imre Lakatos (1922-1974) said that science is a process that continues to develop and cannot be stopped at one point of view. Lakatos developed the concept of a "scientific research program" that combines elements of positivism and falsification. The research program or research design is what determines the quality of the conclusions claimed to be true or false (FIP, 11-136).

Paul Feyerabend (1924-1994) revealed a challenging epistemological concept in research that the courage to let what happens in research be a habit to test which epistemology and methodology can survive through/natural selection. The phrase “let anything go” is an epistemological concept put forward to challenge conventional views of the scientific method and propose that there are no hard and fast rules that must be followed in research. The principle

of “Anything Goes” is different from the scientific approach that emphasizes strict methods and procedures. The scientific approach, according to Feyerabend, must allow for a variety of approaches and methods, even those considered controversial or unconventional. This concept emphasizes that there are no absolute rules in science. According to Feyerabend, if too many restrictions are imposed on scientific research, it can stifle creativity and innovation. Therefore, scientists should be free to choose methods that are appropriate to their research questions. Feyerabend acknowledged that all methodologies have limitations, so the only rule that can survive is “anything goes”. This means that scientists do not have to stick to one particular method, but can combine various approaches. Controversy and flexibility often spark controversy. This flexibility also allows for discoveries that would not have been possible if the rules were too strict. Because it allows methods that are unconventional or even considered unscientific. Therefore, the importance of context must be considered because even though “anything goes,” it must be relevant to the context of the research. Scientists must consider the situation and purpose of the research before choosing a method. With the concept of "anything goes," we are reminded of the variety of scientific research methodologies, so that opening up space for participation for other perspectives is an enrichment in the development of science. All knowledge claimed as a scientific statement is true. (Poespowardojo and Searan, 2021).

Discussion on Critical Breakthroughs in Today's Scientific Practice

Karl Popper (1902-1994) in his work The Logic of Scientific Discovery proposed the concept of falsification as a criterion for the demarcation of science. According to him, scientific theories must be testable by submitting refutations (negations/falsifications) so that the conclusions or claims made can be tested. Conclusions that pass refutations against them will become statements of higher quality or corroboration, so that they are strong and enduring even though they do not rule out the possibility of being wrong and being improved. Thus, logical positivism or logical empiricism proposes an epistemology and methodology that emphasizes verification of experience as the truth of knowledge must be doubted, anarchic, and dogmatic (Poespowardojo and Seran, 2021).

Thomas Kuhn (1922-1926) in his book The Structure of Scientific Revolutions emphasized methodological pluralism as an understanding of the paradigm shift of the divorce of scientific truth. Kuhn's thinking is a rebellion against the positivist paradigm. He put forward the concept of paradigm as a central concept in the history and philosophy of science. Thomas Kuhn talks about paradigm shift as a context for understanding texts, so critical cooperation becomes important to reach a common agreement rationally, not to stop differences but to encourage discoveries that are more qualified, synthetic, and solution-oriented (Kuhn, 1991; Poespowardojo and Seran, 2021).

Imre Lakatos (1922-1974) said that science is a process that continues to develop and cannot be stopped at one point of view. Lakatos developed the concept of a "scientific research program" that combines elements of positivism and falsification. The research program or research design is what determines the quality of the conclusions claimed to be true or false (Poespowardojo and Seran, 2021).

Paul Feyerabend (1924-1994) revealed a challenging epistemological concept in research that the courage to let what happens in research be a habit to test which epistemology and methodology can survive through/natural selection. His expression "let anything go" is an epistemological concept that was put forward to challenge the conventional view of the scientific method and proposes that there are no fixed rules that must continue to be followed in research.

The principle of "Anything Goes" is different from the scientific approach that emphasizes strict methods and procedures. The scientific approach, according to Feyerabend, must allow various approaches and methods, even those considered controversial or unconventional. This concept emphasizes that there are no absolute rules in science. According to Feyerabend, if too many restrictions are imposed on scientific research, it can hinder creativity and innovation. Therefore, scientists should be free to choose methods that are appropriate to their research questions. Feyerabend acknowledged that all methodologies have limitations, so the only rule that can survive is "anything goes". This means that scientists do not have to be fixated on one particular method, but can combine various approaches. Controversy and flexibility often trigger controversy; this flexibility also allows for discoveries that would not have been possible if the rules were too strict. Because it allows unconventional methods or is even considered unscientific. Therefore, the importance of context must be considered because although "anything goes," it must be relevant to the context of the research. Scientists must consider the situation and purpose of the research before choosing a method. With the concept of "anything goes," we are reminded of the variety of scientific research methodologies, so that opening up space for participation for other perspectives is an enrichment in the development of science. Paul Feyerabend's argument opened the door to the use of hermeneutic epistemology and methodology as championed by Richard Rorty (1931-2007). Rorty's criticism of Modern Western Epistemology is that foundational epistemology, rooted in the thoughts of Descartes, Locke, and Kant, only focuses on formal requirements as the basis for valid knowledge. According to Rorty, what is produced by abstract theory is contemplation without paying attention to the concrete dimensions of human life. Rorty sees pragmatism as an alternative that can go beyond the focus of modern Western epistemology. Pragmatism emphasizes the dimension of action and the diversity of values and interests of humans as concrete subjects. Pragmatism connects the way of thinking with the reality of human life. Therefore, the Function of Philosophy in Rorty's View must be a means to achieve the goals of human life. According to Rorty, understanding the world becomes real in action, concrete experience, and not theoretical experience. Here, the practice of diversity becomes important, so building epistemology and methodology must be by the concrete dimensions of the diversity of human life (Poespowardojo and Seran, 2021)

Jean-François Lyotard (1924-1998) in his famous work, “The Postmodern Condition,” discusses the shift from modern metanarratives to fragments of various small stories. He describes the postmodern world as a world without one grand narrative that guides. With this, Lyotard synergizes with the views of Kuhn, Popper, and Feyerabend that freedom in experimentation and expression of intellectual property does not have to come out of a giant package as a scientific package but can radiate from the personal expression of each person's creation, regardless of what background they come from. J. Habermas (1929-) said that misunderstanding often leads researchers to dogmatic and totalitarian behavior rather than inclusive and argumentative scientific behavior. Communication rationality is the ability to free oneself from the exclusivism of views to accept and appreciate differences to find a more comprehensive view of something that is claimed to be universal because of fact-based agreement: rational, logical, and critical. The debate on theory and methodology in scientific research is interpreted as a juxtaposition (viewpoint) of claims (competing claims) in the realm of freedom of communication, so that everyone as a citizen can be involved and together find something that is accepted with sufficient reasons as the better insight. Habermas emphasizes that differences in views in society are an inevitability that must be accepted to maintain the quality of democracy that develops inclusively rather than enforcing the absoluteness of exclusive ideological claims

because that is no longer a trend in today's society (Poespowardojo and Seran, 2021). Roland Barthes (1915-1980), a French philosopher, literary critic, and cultural theorist He has an interesting view on the theory of knowledge about language as a sign. A sign can be interpreted denotatively and connotatively as a theory of knowledge that begins and ends in myth repeatedly. Denotation is the literal or descriptive meaning of a sign. Connotation is an additional meaning that is conceptual or cultural. From denotation and connotation, there is a synthesis of the meaning of myth as a cultural meaning that is maintained in a community/society as a way of seeing. Barthes shows the triadic relationship of signs that develop from myth to logos and return to myth, which is interpreted as a way of seeing society. Through information technology and social media, myth as a way of seeing that marks a society can be accessed by a wider audience and become a source of appreciation for a society in cultural diversity (Poespowardojo and Seran, 2021).

Conclusion

Differences in perspective regarding the source of knowledge (epistemology) and the way to obtain knowledge (methodology) cause chaos in perspective in the development of the history of science. The claim of logical positivism or logical empiricism that a posteriori synthesis is the source and way to obtain scientific and true knowledge is an attempt to avoid Kant bridging the chaos of perspective by building a bridge for pluralism of perspectives to produce the truth of rational knowledge as not a priori synthesis. The implications of the rejection of epistemological and methodological pluralism broaden the anarchic behavior of intellectuals in the Vienna Circle who reject metaphysical-theological arguments in all their manifestations in the fields of literature, philosophy, theology, and anything that is packaged a priori as a meaningless, nonsense, and unvalidated (proven) statement. This is the form of epistemological and methodological anarchism that is opposed by contemporary scientists such as Kuhn, Popper, Feyerabend, Lakatos, Lyotard, Rorty, Barthes, and Habermas. The rejection of logical positivism is the assumption that inductive generalization cannot be used as a basis for claiming that the results are certain and true. Generalization never says anything clear about the facts, so the claim of logical positivism or logical empiricism about value-free knowledge is an expression of performative contradiction because by saying that science is value-free is a judgment, so what is rejected is done.

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