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Mathematical Symbolism in Philosophical Thought: A Study of the Epistemological and Hermeneutic Dimensions in Ernst Cassirer's Philosophy

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Abstract:

The German philosopher Ernst Cassirer, founder of the philosophy of symbolic forms, regards mathematics as the highest expression of human intellectual activity. He argues that mathematics preceded philosophy in addressing questions about existence and the universe, serving as a foundation for abstract thought. According to his view, mathematics and philosophy are organically interconnected and inseparable, forming together a symbolic language through which the world is expressed and reality is interpreted. Concepts such as number and geometry represent models of intellectual symbolism that translate human thought into an organized conceptual system. From this perspective, the present study seeks to demonstrate how mathematical symbolism constitutes a mode of cultural knowledge production and offers a profound understanding of both the spiritual and objective dimensions of human reality.

Keywords: Mathematics, philosophy, number, geometry, symbol, scientific knowledge.

Introduction

The dimensions of inquiry into the human experience are diverse and numerous, owing to the fact that human existence has always been characterized by a certain ambiguity and obscurity. Perhaps for this reason, numerous philosophers, scientists, and thinkers have sought to lift the veil and uncover the meanings and symbols concealed within the folds of history and rooted in the deep civilizational fabric of humanity. Among the most significant and persistent questions, especially in contemporary philosophy, is the question: What is man? From this question have appeared all forms of knowledge and human experience. How, then, has the human being evolved and advanced despite the doubts and difficulties faced throughout history?

Among the most remarkable achievements of humankind, which remain central to this day, are philosophical and mathematical thought, for both express the power of the human mind. They constitute the foundation of every civilization and all human knowledge. Their interconnection is clearly evident, as they both employ the same mechanisms in their processes. Mathematicians express numerical ideas through a symbolic language abstracted from values, utilizing known algebraic

expressions, and then interpret the results in light of their real-world implications. Likewise, philosophers transform their ideas into logical propositions, deriving conclusions from premises, and subsequent conclusions from previously established ones, until reaching a desired outcome that clarifies the structure of their thought.

Therefore, both philosophy and mathematics express abstract truths that are later interpreted through daily realities and ideas linked to the tangible world. Mathematics, in particular, follows the same path as philosophy through logical demonstration, and it has influenced philosophy in its approach to treating results as abstract symbols. The concept of the symbols and symbolism is crucial to the theory of the philosopher Ernst Cassirer (1874–1945), who offered a unique perspective of scientific knowledge in general and of mathematical symbolism in particular.

From this standpoint arises the following problem statement: What is the relationship between philosophy and mathematics in Ernst Cassirer's thought? How does mathematics manifest as a fundamental symbol of human knowledge in his philosophy?

The significance of this study lies in its examination of the relationship between philosophy and mathematics from the perspective of Cassirer's philosophy of symbolic forms and in its exploration of how mathematics functions as a universal language contributing to the reconstruction of civilization.

Cassirer and the Philosophy of Symbolic Forms

A. Cassirer and His Intellectual Path

Ernst Cassirer is one of the most prominent German philosophers and is regarded as the foremost interpreter of critical philosophy. A graduate of the Marburg School, a modern Neo-Kantian movement, he earned his doctoral degree with a dissertation entitled Descartes' Critique of Hypothesis in the Mathematical Natural Sciences[1]. Cassirer was deeply engaged with mathematics, philosophy, and cultural studies, and sought to understand the major emotional and cultural manifestations of human life. He differed from numerous philosophers of his time, both in intellectual scope and in influence, as he is recognized as one of the most important thinkers of the twentieth century, not only for his works but also for his impact on those who viewed the modern age as an age of power[2]. Cassirer is considered an encyclopedic philosopher who developed a comprehensive and universal system of thought known as the Philosophy of Symbolic Forms.

Cassirer endeavored to present a new perspective through his contributions to contemporary epistemology. Since science constitutes the central point of all knowledge, he conceived of it as a symbolic form. On this basis, he developed a theory that serves as an interpretation of knowledge. His epistemological theory was radically innovative, establishing a framework that brought together all forms of cultural production[3]. It is well known that Cassirer shifted his focus from the critique of reason to the critique of culture, relying on multiple symbolic systems that he categorized into hierarchical layers. He considered science to be the final phase in the intellectual evolution of humankind, seeing it as "the highest fulfillment and the supreme expression of human culture[4]." In his view, no force can compare to the power of science, which represents the pinnacle of thought and the most refined product of human civilization.

B. His View of Science as a Symbolic Form

According to Cassirer, scientific knowledge differs from other forms of knowledge. Throughout history, there has never witnessed a complete convergence between the natural sciences and the cultural sciences. The natural sciences have advanced significantly compared to the human sciences, due to the prevailing distinction and methodological division that existed. This division led to conflicts in moral and intellectual identities and, consequently, to what Cassirer described as "a neglect of philosophy's true task, which is to unify our understanding of reality instead of allowing thought to become fragmented amid a diversity of intellectual and ethical domains[5]." Cassirer's development of the philosophy of symbolic forms was therefore an attempt to clarify the totality of human experience and to address the crisis into which philosophy faced it became disconnected from science.

He succeeded in establishing a unity of science grounded in the operation of the concept, whose essence and function remain identical always and everywhere. Mathematics, for Cassirer, represents the universal and comprehensive field around which all human knowledge and thought converge. It involves a broad conceptual meaning that constitutes the structural and functional specificity of conceptual thought and ensures its validity.

In the eighteenth century, it was widely believed that the first step toward understanding this relationship consisted in drawing a fixed boundary between mathematical and philosophical thinking. This proved to be a complex and dialectical endeavor, as it necessitated confronting two seemingly contradictory questions. The link between philosophy and mathematics must never be severed, for "mathematics is the pride of the human mind[6] and its ultimate test." Although anyone studying both disciplines may find an apparent distance between them, in reality they are never truly separate, despite their different modes of expression. Mathematics is the philosophy of reality, and philosophy is the mathematics of reality. Mathematical thought started with philosophical and metaphysical questions, while philosophical reflection began with symbols and numbers that aimed to interpret existence and the universe.

The Dialectical Relationship Between Philosophy and Mathematics

A. The Parallelism of Method Between Mathematical and Philosophical Thinking

Mathematics is among the greatest fulfillments of humankind, and mathematical concepts are abstractions derived from human sensory experiences in the material world. They reflect intellectual distinction and contemplative ability in understanding existence and the universe as a whole. Humanity's observation of the regular and unified patterns of natural events, such as the movement of planets and stars, the rising of the sun and moon, and the succession of the seasons, led to wonder, investigate, and interpretations. This explains why mythological thought was filled with narratives attempting to account for these phenomena, as "it is within such thought that the earliest notions of the order of nature appear.[7]"

It is apparent that mathematics represents a closed and limited unity. While it stands as the model and supreme ideal of mind, it cannot fully occupy or exhaust the capacities of the human mind. For this reason, philosophical thinking aims both to liberate itself from mathematics and, at the same time, to remain attached to it. Philosophy strives to free itself from the exclusive dominance of mathematical, "yet it never denies its power; rather, it seeks to justify it anew.[8]"

B. Mathematics as a Unified Cosmic Field

Therefore, all sciences must align with the standards of mathematics, as it represents the most reliable source of knowledge. Every science is closely linked to it, often without being explicitly aware of this connection. No other discipline, whether natural or human, has ever been so intimately interwoven with all branches of knowledge as mathematics. Since the time of Descartes, mathematical reasoning and deduction have been considered the sole sources of knowledge. Thus, Descartes sought "to transfer all sciences, whether physical or metaphysical, into the domain of mathematics.[9]" It is significant to understand that mathematical inquiry is not confined to a precise study of a single specific domain; rather, it extends to nearly all other disciplines, encompassing art, myth, and history. No field is devoid of mathematical symbols and logic, nor can it be represented except through its principales.

From its very appearance, philosophy has been inseparably connected with mathematics, as philosophy attains its rationality through mathematics, and mathematical thought embraces all aspects of life. It includes both the sensible and the spiritual realms, the world of nature and the world of history[10].

Alongside the connection between philosophy and mathematics, there exists a close relationship between mathematics and physics. Cassirer states, "No field is more closely tied to the general problem of knowledge, nor has any exercised a stronger and more progressive influence throughout history, than the relationship between mathematics and physics[11]." In reality, there has always been mutual collaboration between the two, sharing the same intellectual destiny and attracting equal attention from philosophers and scientists alike. Since Descartes, mathematical reasoning and deduction have been regarded as the only true sources of knowledge.

The modern era was distinguished by its mathematical orientation, and all sciences were required to conform to mathematical standards. Philosophers of that era attempted to restore the classical ideal, dating back to Plato, regarding the value of mathematics. They emphasized that mathematics is "what enables the adoption of clear and distinct ideas concerning the totality of existing things.[12]"

Number as a Conceptual Symbol

A. The Development of the Idea of Number Among Philosophers

The fundamental inquiry into the nature of mathematics is not limited to the precise study of specific domains of knowledge; rather, it must extend to nearly all branches of knowledge. Philosophy attains its rationality through mathematics, as evidenced by many philosophers who employed mathematical symbols and geometry to express their ideas. In general, mathematics represents the domain in which human cognition reaches its highest level of genius. At the foundation of pure science, the concept of number holds a primary position, both historically and methodologically. Thought develops in a clear and structured way through the formation of mathematical concepts. The power of knowledge emerges to revolve around the ability to define sensory logic through the idea of number, for without number, nothing can be truly understood, either in itself or in relation to other things.

B. The Contribution of the Pythagoreans

The Pythagoreans were the first to formulate a philosophy of number and to view number as a universal and cosmic principle. Its application was no longer confined to specific domains but "became widespread and extended over every domain.[13]" Thus, number became the foundation for

all forms of knowledge and all existents. Geometry, arithmetic, music, physics, and astronomy came to be viewed as a single, coherent whole, and all things in the heavens and on the earth were understood to be numbers.

For example, even before the Pythagoreans, the Babylonian civilization was renowned for its precision in astrology and astronomy. They were able to categorize groups of stars and divide the zodiac into twelve sections, a fulfillment that would not have been possible without a solid scientific foundation. In turn, Pythagoras was the first to discover that the pitch of sound depends on the length of a vibrating strings. While this fact itself was not decisive in guiding philosophical and mathematical thought, but rather its interpretation. This interpretation demonstrated a profound secret behind the discovery: the secret of beauty. The Greeks regarded beauty as truth, the fundamental feature of reality. The beauty perceived internally and in harmonious sounds was expressed through simple numerical ratios. Hence, number came to reveal the fundamental structure of the cosmic order. "Number is the guide and master of human thought; without its power, everything would remain obscure and chaotic.[14]"

C. Number as a Means to Understand the Cosmic Order

It is true that number makes the world intelligible and perceptible. However, according to Cassirer, the idea that the world of number is a symbolic world was completely absent from the minds of the Pythagoreans. Their task was not to distinguish between the symbol and the thing symbolized. A symbol does not merely explain what it represents; it replaces it. Thus, all things around us are numbers, which constitutes a fundamental function of human knowledge, as it helps to lift things out of mere objectivity.

The essence of number is always relative, not absolute. A single number is only a specific position within a general division system and has no independent existence or reality. Its value and meaning are identified by its position in the numerical system. In the world of numbers, there is no ultimate or external endpoint; all terms are interconnected through a common relationship, generated by the link between a number and the one that immediately follows it, such as 1 + 2. Despite the simplicity of this relationship, all properties of whole numbers are derived from it. This simplicity distinguishes the system and represents its perfectly clear transparency. The Pythagoreans' idea of number crystallized into two forms: first, that all things are numbers, meaning that things themselves are numbers in essence; second, that things imitate numbers, "things are modeled on a higher principle, which is number.[15]"

With the advancement of science and the appearance of modern theories, number has lost much of its original existential importance and has come to signify a symbolism that surpasses the power of language, due to its capacity to produce scientific knowledge. In this symbolism, we do not find orderly words but rather terms arranged according to a single plan that leads to a clear and defined structural law.

The Pythagorean doctrine continues retains its fundamental importance despite all the changes that have occurred into philosophical thought. It abolished understanding the material essence of things by reducing them to numbers, and deepened insight to demonstrate that even if there were no core of physical or metaphysical entities, the concept of number remains the main and most accurate expression of the rational structure of all existing things. Number is the fundamental and most original

concept possessed by mathematical and physical systems. “Number occupies the first rank among the concepts of pure sciences in the chronological line of numbers.[16]”

What characterizes the conceptual framework of number, as formulated in mathematics, is that numbers are “entities” that are not defined. They do not hold intrinsic value relative to each other; their value is always identified by the structural principles of pure mathematics. Numbers acquire their conceptual existence only to the extent that these concepts can be generated from the original principle[17].

To reach the conceptual structure of numbers, the number system must be developed in a way that does not make numbers generate each other directly through operations such as addition. For instance, the number three appears from the sum 1 + 2. This method contributes to the generation of all numbers to infinity, in principle, and guides us toward objectivity.

Mathematics as a Symbolic Language of Knowledge

A. The Symbolism of Numbers and Their Role in Human Thought

Cassirer presents a passage that reflects the intuitive structure of the conceptual framework of number and its properties. He states: “The name of a thing functions like an index of the number, demonstrating a step forward or backward within the universal series, which indicates the degree of differentiation between that progression. It is the distinction between the various phases of the act of counting. Arranging the progression of numbers in their multiple positions is possible in vain while they remain in place, confined to the narrowest limits. For instance, the value of the first two terms of the series is identified only by an independent name, with an obscure reference to an undefined number. Yet this strict determination still enables the recognition of a new beginning and a new necessity in thought[18].”

Thus, word has become expressions of mental process, no matter how simple. Cassirer also discussed the link between mathematics and language, noting that numbers have undergone a kind of linguistic development. Numerical order does not composed of sounds with specific graphic signs. For instance, when observing the act of counting using ten units grounded in the fingers of the hand or other body parts carrying components, “we conclude that the body everywhere formed the basic model of primitive counting[19].” From this, we see that numerical relationships also emerge from counting based on the body and its organs. “The differentiation of numerical relations, just like spatial relations, starts from the human body and its organs, and from there gradually extends to the entire sensory and intuitive world.” Thus, all concepts of number before becoming concepts expressed in language are purely manual, gestural concepts, or bodily concepts[20].

Cassirer continues to consistently support the idea of the logical intuition of individual things, attempting to grasp them even in an uncertain manner. At the moment when numbers take form, it is not related to those things themselves, but the way they relate to one another and coordinate among themselves. The scientific concept of numbers appears when its beginnings are freed from all incidental obstacles, ascending toward pure universality. This requires a cosmic system that begins from a fixed general principle and a unified initial position.

The progress of numbers may have arisen from the discovery of unequal and irregular lengths, which caused scientists, who had believed in the harmony of mathematics as a symbol of certainty and

stability, to face a crisis regarding the validity of mathematical principles. This led modern scientists and philosophers to develop the theory of mathematical continuity, which, without it, "would have altered all our ideas about objective truth,[21]" creating new numbers, encompassing fractions and irrational numbers, entities that were previously unconsidered. Since number had represented correctness, precision, and proportionality between wholes, any length not corresponding to the standard measure was disregarded.

Cassirer believes that in creating these new categories of numbers, "we do not create numbers; rather, we create new symbols." They stand on the same level as natural numbers because they, too, express simple relations. Furthermore, they can symbolize a higher order that we cannot grasp directly, serving a symbolic function as a relation of relations. Yet this does not place them in conflict with whole numbers; instead, it clarifies and reinforces their very nature.

Mathematical thought was compelled to bridge the gap between whole numbers which are quantities in themselves, and the material world included in the continuity of space and time. To fulfill this, a symbolic construction of numbers and an interpretation of the meaning of number, not just its nature and essence, was developed. Mathematical philosophy sought to demonstrate that this change does not diminish the value of number or the truth it represents, nor does it lead to ambiguity or contradiction. Sometimes, we cannot understand quantities if "expressed only as integers, but we can understand them if expressed through new symbols.[22]"

Thus, the mathematical concept of numbers has been compelled to reach homogeneity and the eidos. Numbers are no longer considered in abstraction from their positional value. "Accordingly, one can distinguish the pure form of numerical relations from everything that may enter into it[23]." In this way, Cassirer perhaps sought to be entirely different from the process of assigning meanings and mathematical order to references. He argues that the system of numbers must rely solely on itself, and the meaning of the set of numbers must arise from its own purity. In other words, it cannot be said that when consciousness is able to realize that the referential system it uses to assign meanings to the phenomena of the external world becomes fully reflective, it turns into a wholly symbolic and conceptual system.

This means that only when the fixed relationships are defined and formally established in terms of principle, law, and function can the referential system become autonomous. Only then can we attribute meaning to phenomena through observation and representation, a meaning arising from the fact that the numerical system appears responsible for the law itself.

Cassirer's aim in introducing general considerations for interpreting and classifying representative activity and its division within scientific thought was to reveal that the arguments developed by mathematics as differentiated reference systems for experience cannot, in any way, claim final validity as a confirmed "copy" of reality. On the contrary, these reference systems are valid only insofar as their logical precision is maintained.

Therefore, Cassirer outlines and constructs a standard of validity grounded in a methodological standard that governs the development of mathematics. By examining this development and the methods by which it was established, we can understand the role of the referential system upon which mathematics depends in order to maintain its consistency, continuity, and integration with other sciences.

B. Mathematics as a Tool to Express Reality and Spirit

Thus, from the very first discovery of mathematics, we notice that it is a purely symbolic language, concerned not with describing things but with expressing general relationships. The history of mathematics mirrors the history of other symbolic forms. It has been proven that it is difficult for mathematics itself to establish a new and different symbolic dimension. In essence, mathematical symbols are themselves the symbols of language and art, surrounded from the beginning by a magical atmosphere filled with meanings, obscure terms, mythological intertwinings, attempts to uncover divine essence, the mystery of man, and the origin of beings. They were also accompanied by a sense of awe and religious reverence, which gradually developed into a type of metaphysical faith.[24]

As mentioned, since Plato, number has been the center of intellectual world, becoming the source of truth in its clarity and precision. Even in his theory of the world of Forms, he attempted to describe it based on pure number. He considered mathematics a middle ground between the sensible world and the supersensible world. The power of number extends across the entire visible world. We live in a world filled with numbers, and mathematics studies relations and patterns of relations. "Number, which once existed as a separate physical entity employed to represent truth and express things, has become a tool to demonstrate nature and reality.[25]"

In conclusion, number is the most significant characteristic of the science of rational principles and the most prominent symbol distinguishing mathematics. Through it, tangible and perceptible forms ascend to a higher level of abstraction. The intellectual elevation related to number in its logical and mathematical applications does not imply separation from the symbolic nature of language. Cassirer's interpretation demonstrates that "the connection between speech and thought reappears with the logical and linguistic development of numerical concepts and may reach its clearest and most distinctive expression." Thus, to fully understand the nature of pure conceptual numbers, they must first be given a linguistic form. Language prepares the scientific conception of number, in addition to the stability of its material and sensory nature.

"Mathematical theories were not originally created to advance or support natural inquiry; rather, they were a means of representing the patterns of the mind that preceded any practical application.[26]" Describing real-world facts necessitates complete freedom to construct various representations through our mathematical symbolism, providing natural thought with all its cognitive tools. Nature is an inexhaustible sea, always introducing new problems we cannot anticipate. We cannot predict all facts, but we can confront them through the power of symbolic thought

Geometry and Philosophy: The Convergence of Concepts

A. Geometry as a Mathematical and Philosophical Discipline

Geometry, which is considered one of the most important branches of mathematics, has always maintained a strong connection with philosophy. It was the first proof of the link between number and its capacity to extend into broad domains. By employing philosophical techniques, we can better comprehend the practice of geometry, and applying this understanding creates greater opportunities for innovation and its application across all fields of knowledge.

Geometry, together with philosophy, has transcended its original function of expressing volumes, shapes, distances, and land measurements, and has come to be associated with the spirit of geometry.

This spirit draws the boundaries between the natural–mathematical sciences and the human sciences. The geometric spirit is not limited to geometry itself; rather, the sciences of ethics, politics, literary criticism, and aesthetics all embody the geometric spirit in the way they express themselves.

B. Applying the Geometric Spirit to Social Concepts

The spirit of geometry is the spirit of pure analysis, and its application is unlimited. "Experiments were carried out in the 18th century in which the principales of the geometric spirit, particularly the field of numbers and magnitudes, were applied to both spiritual existence and social existence. It was found that a new understanding and a new domain of the power of reason always appear, becoming accessible as soon as the mind learns to subject this new field to its method. Through geometry, symbolic thought took another significant step forward, and it became evident that all our knowledge of distance and spatial relations can be translated into the language of numbers."

C. Contributions of Philosophers like Descartes and Spinoza

Over the following centuries, the exceptional nature of mathematical knowledge remained highly valued by philosophers. Even in the shift from the Middle Ages to the Enlightenment, mathematics retained its full integrity. René Descartes, the French philosopher known as the father of modern philosophy, highlighted in his famous work Meditations on First Philosophy, after systematically doubting all knowledge, that mathematical concepts and their interrelations constitute certain, innate knowledge derived from God, not experience. Descartes sought to apply this mathematical and geometric certainty to philosophical subjects, expressing geometric forms through algebraic equations. He created analytic geometry, a bridge between algebra and geometry, one of the first major fulfillments of modern philosophy, revealing that the language of philosophy was no longer a private terminology but part of a more universal language: the language of comprehensive mathematics[27].

Likewise, Spinoza introduced his philosophical discourse in the form of a mathematical model and geometric axioms to express his work in ethics. The purpose of employing geometry as a method was to establish an ethical foundation that combined philosophy and science. Geometry was viewed as the basis of mathematical reasoning, forming a link between the universe and humanity. Therefore, it could be considered a mathematical theory of the moral universe and "perhaps the correct key to comprehending both the cosmic and ethical order.[28]"

For much of history, humans relied on Euclidean geometry, founded by Euclid of Alexandria in the fourth century BCE, grounded in five axioms. However, challenging the fifth axiom led to the establishment of new geometries, each consistent within its own system. This coincided with the discovery of paradoxes in set theory and function theory, demonstrating flaws in the mathematical structure. These developments led to a crisis of mathematical certainty, giving rise to the domain of the Foundations of Mathematics, concerned with studying the logical and philosophical basis of mathematics. This process was essentially a form of reverse engineering, sought at uncovering the original, fundamental structure on which the entire body of knowledge was built.

Mathematics and philosophy cannot be separated, especially since philosophy is connected to all sciences, and all sciences aim to uncover truths and discover the origins and nature of things. Numerous great philosophers excelled in several domains, and most were trained in mathematics. Cassirer, unlike many of his contemporaries, regarded mathematics as a symbolic foundation

contributing to the establishment of human civilization and aiding humans in understanding themselves. He was able to renew the discourse on universal mathematical judgments, linking them to perceptible reality and expressing them effectively[29].

Towards a Comprehensive Symbolic Understanding of Reality

A. Mathematics as a Foundation of Knowledge and Culture

Through his intellectual scope, Cassirer was regarded as one of the most significant thinkers of the twentieth century. He played a crucial role in restoring culture and transforming it into a universal culture based on symbolism. He regarded mathematics as an abstract symbolic form that contributes to progress and to understanding or attempting to understand nature. When fundamental mathematical ideas were obscure, dense with ambiguities, errors, and difficulties rather than clear, coherent, and easily applicable, these ambiguities could only be removed once the general nature of mathematical ideas was clearly understood. Scientists and philosophers had to acknowledge that mathematics is not a theory of things, but rather a theory of symbols. Mathematics precedes science, and the most significant mathematical theories did not arise from practical or industrial necessity; they are general frameworks of thought that precede any practical application.

Therefore, humans recognized the uniqueness and value of mathematics from the beginning, as it is among the most reliable forms of knowledge. Despite all scientific discoveries and advancements, mathematics has remained the foundation of the sciences and has held an exceptional status throughout history.

Philosophy and mathematics remain among the broadest and most extensively studied domains. Cassirer, through his knowledge of mathematics and geometric reasoning, and through the clarity and distinctiveness of his contemplative intellect, simplified the relationship between them and made symbolism a connecting form. Both disciplines aim at a single goal and study a single truth: the inquiry into humanity and existence. Accordingly, they should not be separated or distinguished as purely mathematical or purely philosophical. Instead, they should maintain the harmony and integration exemplified by the Greeks. Civilizational progress and the elevation of human culture can only occur by integrating all human experiences such as art, religion, myth, and language, while recognizing that the thread connecting philosophy and mathematical symbolism never breaks. Today, the language of mathematics predominates in the civilized world, permeating scientific, literary, social, and economic life.

In conclusion, mathematics is among the most powerful symbols expressing multiple forms of knowledge. For Cassirer, it represents a distinct intellectual field with a unique semantic orientation, different from other forms of thought, forming a broad and structured pattern. In the philosophy of symbolic forms, mathematics is a spiritual element with a defined role within the overall structure of the spiritual world. It contributes to the process of symbolic formation, and through its symbols, it allows an understanding of how humans perceive and interpret both the external and internal worlds, the objective and the subjective, in a scientific and systematic manner.

B. The Practical Application of Mathematical Symbolism

Cassirer's philosophy represents a call to reconsider the relationship between mathematics and human thought from a symbolic perspective. Based on this, this approach can be applied in multiple domains,

such as artificial intelligence, digital humanities, and modern epistemological theories, by developing symbolic models that reinterpret reality in light of contemporary scientific and technological transformations. Futhermore, research could be expanded to examine the influence of mathematical symbols in literature, art, and religion, offering a deeper understanding of human cultural experience.

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