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Russell's Objections to Aristotelian Logic and Its Role in the Construction of Modern Logic

Russell'ın Aristotelesçi Mantığa Yönelik İtirazları ve Modern Mantığın İnşasındaki Rolü

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Abstract

Bertrand Russell is regarded as one of the most influential philosophers of the twentieth century due to his significant contributions to logic and philosophy. Russell argued that traditional Aristotelian logic contained certain epistemological and logical limitations and therefore needed to be reconstructed within a more precise symbolic framework. Traditional logic was primarily shaped by Aristotelian syllogistic and term logic, whereas Russell maintained that this system was insufficient particularly in dealing with multiple relations, quantification, and propositional analysis. According to him, although Aristotelian logic was successful in explaining certain forms of inference, it remained limited in providing the degree of precision required by modern science and mathematics. In this context, Russell's contributions to the development of symbolic logic played an important role in making logical analysis more systematic and analytical. In particular, Russell's work became highly influential in the development of the modern logical tradition initiated by Gottlob Frege. The aim of this study is to examine Russell's criticism of traditional logic and to evaluate his role in the development of modern logic. Accordingly, the study analyzes Russell's criticisms of Aristotelian logic and discusses how these criticisms both revealed the limitations of traditional logic and contributed to the development of modern logical systems. Furthermore, it is argued that the symbolic logic advocated by Russell provides more comprehensive and precise methods of analysis compared to traditional logic. In this respect, the study seeks to demonstrate the significance of Russell's critique of traditional logic in the transformation of modern philosophical and logical thought.

Keywords: Russell, Aristotelian Logic, Modern Logic, Proposition, Inference

Öz

Bertrand Russell, mantık ve felsefe disiplinlerine önemli katkılar sunmuş, XX. yüzyılın en etkili filozofları arasında yer almıştır. Russell, geleneksel Aristotelesçi mantığın hem epistemolojik hem de mantıksal açıdan bazı sınırlılıklar taşıdığını ileri sürerek, mantığın daha kesin ve sembolik bir yapıya kavuşturulması gerektiğini savunmaktadır. Geleneksel mantık, özellikle Aristotelesçi kıyas teorisine dayanan terimler mantığı çerçevesinde şekillenmişken, Russell bu sistemin özellikle çoklu ilişkiler, niceleme ve önerme çözümlemeleri konusunda yetersiz kaldığını ileri sürmektedir. Ona göre Aristotelesçi mantık, belirli çıkarım biçimlerini açıklamada başarılı olsa da modern bilim ve matematiğin ihtiyaç duyduğu kesinliği sağlamada sınırlı kalmaktadır. Bu bağlamda Russell'ın sembolik mantığın gelişimine yaptığı katkılar, mantıksal çözümlemelerin daha sistematik ve analitik bir yapıya kavuşmasına önemli ölçüde katkı sağlamıştır. Özellikle Frege ile başlayan modern mantık geleneğinin gelişiminde Russell'ın çalışmaları belirleyici bir rol oynamıştır. Bu çalışmanın amacı, Russell'ın geleneksel mantığa yönelik eleştirilerini inceleyerek onun modern mantık anlayışının gelişimindeki yerini değerlendirmektir. Bu doğrultuda Russell'ın Aristotelesçi mantığa yönelttiği eleştiriler analiz edilmekte; söz konusu eleştirilerin hem geleneksel mantığın sınırlarını görünür kılması hem de modern mantık sistemlerinin gelişimine katkısı tartışılmaktadır. Ayrıca Russell'ın savunduğu sembolik mantık anlayışının, geleneksel mantığa kıyasla daha kapsamlı ve kesin çözümleme imkânları sunduğu ileri sürülmektedir. Böylece çalışma, Russell'ın mantık eleştirilerinin modern felsefi ve mantıksal düşüncenin dönüşümündeki önemini ortaya koymayı amaçlamaktadır.

Anahtar Kelimeler: Russell, Aristotelesçi Mantık, Modern Mantık, Önerme, Çıkarım

1. Introduction

The history of logic has been one of the fundamental disciplines of philosophy, as a field in which various theoretical approaches aimed at rendering processes of thought coherent and valid have been developed. Each new approach that has emerged within this field can be understood as an effort to criticize and reconstruct preceding logical theories. In particular, Russell, who brought about radical transformations in the field of logic at the beginning of the twentieth century, stands out for his sharp critiques of the traditional conception of logic. Although the foundations of modern symbolic logic were laid primarily by Gottlob Frege, Russell played a decisive role in extending and systematizing this new logical framework. Russell's logical investigations not only reshaped the domain of logic itself but also led to significant shifts in the overall structure of philosophy, offering new perspectives in areas such as epistemology, mathematics, and the philosophy of language.

One of the central targets of Russell's critique of traditional logic concerns the conception of universal propositions, which constitute one of the fundamental building blocks of deductive reasoning or syllogistic inference. Since Aristotle, traditional logic has treated universal propositions as statements that apply to all individuals belonging to a given class and has emphasized their decisive role in reasoning. However, Russell argued that this traditional approach gives rise to certain logical difficulties and therefore requires reconsideration from the standpoint of modern logic. In this context, an analysis of Russell's critique of universal propositions proves to be an appropriate starting point for understanding his broader criticism of traditional logic.

2. The Debate on Universal Propositions

Aristotle classified propositions according to quantity into four categories: universal, particular, singular, and indefinite. Within this classification, singular propositions were treated as universal insofar as they were taken with their entire extension; consequently, Aristotle considered singular propositions to fall under the category of universal propositions. Russell, however, argues that this approach involves a formal error.

To illustrate this point, Russell compares the following two propositions:

1. *Socrates is a man.*

2. *All Greeks are men.*

Russell maintains that Aristotelian logic fails to draw a sufficiently clear distinction between these two propositions. In particular, he argues that the

proposition "All Greeks are men" rests upon the presupposition that Greeks exist. According to Russell, Aristotelian syllogistic reasoning cannot be valid without assuming the existence of Greeks (Russell, 1994a, p. 317). In this form, the proposition "All Greeks are men" cannot be assigned a truth value; that is, it is neither true nor false. In Russell's logical theory, expressions such as "x is a man" and "x is mortal" function as propositional functions that imply conditional statements of the form "If x is a man, then x is mortal." Such a conditional can legitimately be regarded as a proposition and thus can be either true or false (Anellis, 2009, p. 157). Accordingly, the statement "All men are mortal" can be more precisely expressed as "For any x, if x is a man, then x is mortal."

At this point, however, particular attention must be paid to the phrase "always." If x is restricted to cases in which x is a man, then it follows that x is mortal, since if x is a man, x is mortal (T → T = T). Yet this may lead to an erroneous generalization such as "x is always mortal." For in cases where x is not a man—for instance, if x is a stone or an angel—the statement "x is mortal" need not be true (Russell, 1971, p. 71). In other words, if x is a man, then x is always mortal; if x is not a man, whether x is mortal is irrelevant. In modern logic, a conditional proposition is true whenever its antecedent is false, regardless of whether the consequent is true or false. Thus, if the antecedent "x is a man" is false, the truth or falsity of "x is mortal" does not affect the truth of the conditional (F → T / F → F = T). Consequently, if reasoning is to be carried out using such propositions, the affirmation—and hence the existence—of the antecedent is essential.

In this context, Russell offers the following inference as an example:

- All Greeks are men.
- All Greeks are white.
- Therefore, some men are white.

According to Russell, this inference is valid only insofar as Greeks exist; if Greeks do not exist, the inference loses its validity. In other words, the validity of the conclusion depends upon the assumption that Greeks exist. For this reason, in order to secure logical clarity, Russell proposes that the proposition "All Greeks are men" should be analyzed into two distinct components:

1. Greeks exist.
2. If anything is Greek, then it is a man (Russell, 1994a, p. 317).

This analysis suggests that a proposition involving universal quantification requires explicit clarification regarding existential commitment. Symbolically, ∀x(Fx → Gx) holds only if ∃xFx; that is, ∃x (x is Greek) and ∀x (if x is Greek, then x is a man).

In traditional Aristotelian logic, universal propositions are generally interpreted as carrying existential import, whereas Russell rejects this assumption within the framework of modern symbolic logic. The statement "All Greeks are men," taken by itself, does not explicitly assert the existence of Greeks. However, when analyzed in the manner proposed above, it can be said to imply existence. For example, in the proposition "All men are mortal," the phrase "all men" can naturally be interpreted in ways that both affirm and deny existence. If no existential claim is made (that is, if the class of men is empty), both "All men are mortal" ($F \rightarrow T$) and "All men are not mortal" ($F \rightarrow F$) are taken to be true. The contradictory of a universal proposition is a particular proposition. If the universal proposition is true, its contradictory—such as "Some men are not mortal"—is false and does carry existential import. Traditional Aristotelian logic assumes that universal propositions imply existence, an assumption that Russell regards as mistaken.

This point can be further clarified by an example provided by Russell: "All dragons are animals, and all dragons breathe fire; therefore, some animals breathe fire." The validity of the conclusion here presupposes the existence of dragons. This inference exemplifies the Darapti syllogistic form. However, such an inference becomes problematic if the class referred to in the premises is empty; consequently, the conclusion results in a false generalization. Historically, such invalid syllogisms posed a significant obstacle to Leibniz's attempts to construct a mathematical logic. According to Russell, Leibniz recognized the invalidity of forms such as Darapti when developing logical systems. For instance, the inference "If all A are B and all A are C, then some B are C" leads to an erroneous conclusion (Russell, 2010, p. 63). Russell attributes such errors to misunderstandings within classical logic.

Two major problems are overlooked in the Darapti form: first, it ignores the possibility of the empty set and thus makes an unwarranted existential assumption; second, it violates logical rules governing the transition from universal ($\forall$) to existential ($\exists$) quantification. The given premises do not support the conclusion "Some animals breathe fire," because they do not specify whether the class A (dragons) is empty. If dragons were known to exist and possessed the properties attributed to them, then the conclusion would be valid, since the class A would no longer be empty and an existential claim could legitimately be made. Hence, the validity of logical inferences depends not only on their formal structure but also on the existential status implied by the premises.

Moreover, in universal propositions that express a generalized relation for all members of a given class, it is necessary both to define the scope of the class and to attribute the relevant property to each of its members. For this reason, Russell argues that the proposition "All Greeks are men" is formally more complex than "Socrates is a man" (Russell, 1994a, p. 317). This complexity can be reduced by noting that "Socrates is a man" has a simpler formal structure, as it can be

directly verified by reference to an observable fact. For example, knowledge that Socrates possesses a human body suffices to establish the truth of the proposition. Furthermore, this proposition can be reduced to the general form "x is a man," where "x" represents a specific subject, namely Socrates. Yet the use of the name "Socrates" itself involves an implicit description. According to Russell, for a proper name to function genuinely as a proper name, it must be directly connected to sensory experience. What makes a name truly "proper" is its reference to an object that is immediately given in perception. Consequently, names such as "Socrates" do not form objective propositions referring straightforwardly to physical objects in the external world; rather, they function as descriptions grounded in subjective experiences or sense-data (Grünberg, 2007, p. 127).

At this point, Russell argues that the formal complexity inherent in propositions such as "All Greeks are men" gives rise to errors in metaphysics and epistemology. He illustrates this by contrasting the propositions "Socrates is mortal" and "All men are mortal." The truth of "Socrates is mortal" can be known through testimony, whereas the truth of "All men are mortal" is accepted inductively and therefore does not constitute certain knowledge. For this reason, Russell holds that "All men are mortal" is merely probable, not certain. Metaphysical errors arise, he argues, from the use of subjects in such propositions. Treating "Socrates" and "all men" as if they were on the same logical level led Aristotle, according to Russell, to regard species as substances. This, in turn, generated difficulties on both logical and ontological grounds (Russell, 1994a, pp. 317–318).

Another error Russell attributes to Aristotle is the assumption that "the predicate of a predicate may be a predicate of the original subject" (Russell, 1994a, p. 318). To illustrate this point, Russell considers the following example, in which the universal is treated as an extensional function of the particular (Russell, 1971, p. 89): "Socrates is Greek"; "All Greeks are men." According to Aristotle, "man" is a predicate of "Greeks," and "Greeks" is a predicate of "Socrates." From this, Aristotle infers that "man" is directly a predicate of "Socrates." Russell, however, contends that this approach obscures the distinction between particulars and universals and leads to philosophically problematic consequences.

One such consequence is the identification of single-member classes with their sole members. For example, the assumption that a class consisting of only one element is identical with that element leads to difficulties in logic and mathematics. According to Russell, this confusion renders the development of a logical theory of the number "one" impossible (Russell, 1994a, p. 318). In Aristotelian logic, the predicate is understood as establishing a relation to the subject. Thus, in the proposition "Socrates is Greek," Socrates is the subject and "Greek" the predicate; similarly, in "All Greeks are men," "Greeks" functions as the subject and "men" as the predicate. Russell argues that Aristotle, in combining these propositions, commits the error of assuming that predicates can be directly

transferred from one subject to another. That is, he treats "man," a predicate of "Greeks," as indirectly but directly applicable to "Socrates."

Russell maintains that although combining the propositions "Socrates is Greek" and "All Greeks are men" permits the inference "Socrates is a man," this result should be understood as the outcome of a logical inference, not as the establishment of a direct predicative relation. At the heart of Russell's critique lies the distinction between names and predicates: names refer to particulars (for example, "Socrates"), whereas predicates express universals (for example, "man"). Because Aristotle's system fails to draw this distinction with sufficient clarity, universals may appear to be directly predicable of particulars. Russell argues that this creates a logical confusion.

According to Russell, this confusion leads to the error of identifying a single-member class (such as a class containing only Socrates) with the individual itself. Treating "Socrates" as a particular while simultaneously conflating him with a class that contains him generates difficulties in the development of number theory and class theory and results in misleading metaphysical conclusions. It becomes unclear whether "one" refers to a number, a class, or an individual. This ambiguity complicates logical and mathematical analysis and leads to conceptual confusion in metaphysics, particularly regarding the relation between particulars and universals. For this reason, Russell argues that predication should not be understood in the straightforward Aristotelian sense of inherence between subject and predicate. Such predication is possible only indirectly, through logical inference. Aristotle's failure to recognize this indirectness, Russell argues, gives rise to serious logical and metaphysical problems.

3. The Structure and Organization of Propositions

It is well known that among the various forms of reasoning Aristotle accords priority to deduction. At the center of deductive reasoning lies the syllogism. Aristotle's theory of the syllogism is grounded in simple propositions composed of a subject and a predicate. For this reason, in Aristotelian logic, the arrangement and structure of such propositions take precedence over their content.

Russell, by contrast, maintains that every proposition and every inference consists of two fundamental components: content and form. Content concerns what a proposition or inference is about, whereas form concerns the manner in which the components of a proposition are combined. For example, the propositions "Socrates is mortal" and "The sun is hot" differ in content, yet share the same form. Russell argues that logic is not concerned with content itself but with form. The task of logic, according to him, is to abstract from the components of a proposition or inference and to operate solely on its abstract form. In all inferences, form is essential, whereas content is responsible only for

the truth of the premises. This approach lays the groundwork for the modern conception of logic, which regards logic as essentially concerned with formal structures. For this reason, Russell finds Aristotle's approach inadequate and emphasizes that greater importance must be attached to form (Russell, 1996, pp. 56–59).

Russell further argues that what is essential in inference is form alone and that concern with content is, from a logical standpoint, an unnecessary endeavor. According to him, the significance of content is limited to establishing the truth of the premises. For example, in the inference "Socrates is a man; all men are mortal; therefore, Socrates is mortal," the specific terms "Socrates," "man," and "mortal" are not relevant to the form of the inference; they are empirical terms. What matters, Russell contends, is not the concrete content of these components, but the logical structure of the relation between the premises and the conclusion (Russell, 1996, p. 58).

Russell expresses this relation in more general terms as follows: "If something has a certain property, and everything that has that property also has another property, then that thing has the second property as well" (Russell, 1996, p. 58). This generalization abstracts entirely from particular objects and concerns only general and formal propositional structures. According to Russell, all logical inferences are instances of such general and formal relations. He regards engagement with inferences whose content is concrete and determinate as a waste of time and proposes that the resolution of such concrete issues be left to the empirical sciences (Russell, 1999, p. 244). Logic, in general, is distinguished by the fact that its propositions can be put into a form applicable to anything whatsoever (Russell, 1993, p. 367). In other words, logical propositions are universal in scope and can be generalized so as to apply to any object, state of affairs, or situation. The capacity to be expressed in such a universally applicable form is a defining feature of logical propositions (Proops, 2007, p. 2). Logic, therefore, is a discipline endowed with the distinctive capacity to render its propositions universally applicable.

Aristotelian syllogistic logic, because it does not include relational structures, lacks the capacity to express and analyze many forms of quantification that occupy a central place in modern logic. This limitation significantly restricts its expressive power (Russell 1946/2004, ch. 22 & Raab, 2024, p. 30). As a result, Aristotelian logic confines itself to the investigation of wholly general and formal patterns of reasoning grounded in subject–predicate propositions. It is precisely this confinement that Russell finds deficient in classical logic. According to Russell, classical logic is limited to simple propositional forms that merely attribute a quality to a subject. Such forms may be grammatically correct—for example, the proposition "This object is round"—yet they lack the level of philosophical generality required for an adequate logical analysis. Russell argues that logic

should not be restricted to subject–predicate propositions alone. Propositions such as "This thing is larger than that" express relations between two objects and differ formally from subject–predicate structures. The neglect of relational propositions, Russell contends, has led to misunderstandings and systematic errors in traditional metaphysics. Logic, therefore, must investigate not only the formal structure of individual qualities but also the formal structure of relations between objects. In this way, Russell's critique exposes the limitations of classical logic and prepares the ground for the modern logical approach, which prioritizes relational analysis and abstract generalization (Russell, 1996, pp. 47–48).

According to Russell, the structure of language is highly conducive to the extension of subject–predicate logic, and for this reason, this logical system has been developed to its natural limits. Nevertheless, Russell argues that logic cannot be adequately explained solely in terms of subject–predicate relations and that it must move beyond binary-term relations. Logic, he maintains, should be expanded to encompass ternary, quaternary, and even quinary relations (Russell, 1956, p. 332).

Russell points out that the belief that all propositions are of the subject–predicate form is a serious misconception. Such an approach proves inadequate for explaining reality and hinders philosophers' understanding of the scientific world. According to him, many philosophers have preferred to defend belief in a kind of "supersensible world" rather than to engage with the world as perceived through the senses. This mystical tendency is grounded in the view that the world of sense is unreal, and under the influence of this view, classical logic loses its capacity to deal properly with relations and connections (Russell, 1996, pp. 48–49).

In Russell's view, classical logic is particularly inadequate in its treatment of relations. According to the classical approach, a relation is reduced to the properties of the related terms. Russell rejects this reduction as incapable of accounting for real-world relations. He therefore introduces distinctions such as symmetrical, asymmetrical, and transitive relations in order to undermine the classical view. A relation is symmetrical if the relation that holds between A and B also holds between B and A. For example, if A is the sibling of B, then B is the sibling of A; in such relations, both terms occupy an equal position. A relation is asymmetrical if the relation that holds between A and B never holds between B and A. For example, if A is the husband of B, then B cannot be the husband of A; similarly, if one object is above another, the reverse does not hold (Russell, 1996, pp. 49–50). Such relations are one-directional. A relation is transitive if, whenever it holds between A and B and between B and C, it also holds between A and C (Russell, 1996, p. 50). For example, if A comes before B and B comes before C, then A comes before C.

Russell regards these different kinds of relations as fundamental to logic. According to him, by focusing exclusively on subject–predicate relations, classical

logic overlooks the diversity and complexity of relations. Logic, in Russell's view, must address not only qualities but also the complex relations that obtain between objects. These critiques reflect Russell's effort to reconceive logic within a broader and more dynamic framework, while simultaneously exposing the limitations of classical logic.

Finally, Russell examines in detail whether all relations can be reduced to predicates. In the case of symmetrical relations, such reduction may be partially acceptable. For example, equality, as a symmetrical and transitive relation, can be interpreted as the possession of a common property. Symmetrical but non-transitive relations, such as inequality, may be understood as the possession of two distinct properties. However, Russell argues that asymmetrical relations—such as "before," "after," "greater than," and "less than"—cannot be reduced in this manner. He emphasizes the distinctive nature of asymmetrical relations. For instance, if we know only that two things are unequal but do not know which is greater, the difference between their magnitudes cannot be explained by appealing to properties alone. To express this difference, we must necessarily employ relations such as "greater than" or "less than." The existence of a relation such as "greater than" reflects not differences between properties but direct relations between objects. For this reason, Russell maintains that asymmetrical relations cannot be explained within the classical framework that reduces all of reality to subject–predicate relations. To reject such relations, he argues, is to render logic incapable of understanding reality (Russell, 1996, p. 51).

4. The Critique of Deduction and Induction

Russell holds that Aristotle and ancient Greek thought in general attribute excessive importance to the method of deduction. According to him, deduction is a method that lacks the capacity to generate genuinely new knowledge; it merely reorganizes information that is already implicitly contained in the premises. Russell illustrates the limitations of deduction through examples. If we claim that a particular individual—say, Mr. Smith—is mortal, we may ground this claim in the general proposition that all human beings are mortal. Yet such a generalization is based on observation and is therefore ultimately inductive. Russell maintains that induction offers less certainty than deduction, as its conclusions are only probabilistically true. Nevertheless, induction possesses a crucial advantage: it is capable of producing new knowledge. Outside logic and mathematics, most inferences that matter in life are inductive in nature. Russell considers law books to be one of the few exceptions to this general classification (Russell, 1994a, p. 319). In other words, according to Russell, the practice of science, the formulation and application of scientific laws, and even the conduct of everyday life presuppose the acceptance of inductive principles. However, Russell

insists that inductive principles should not be assessed in terms of absolute truth or falsity, but rather within the framework of probability. Induction does not aim at certainty; instead, it represents an approach to knowledge that relies on probability and reasonable inference rather than demonstrative proof (Russell, 1994b, p. 107).

Russell compares a priori propositions such as "Two plus two equals four" with empirical generalizations such as "All human beings are mortal." The former, he argues, is an a priori proposition that yields certainty through mathematical inference. For example, if we know that Robinson and Smith are two people, and that Brown and Jones are also two people, we can infer that Robinson, Smith, Brown, and Jones together constitute four people. This inference yields information that is not explicitly stated in the premises. For this reason, Russell acknowledges that deduction can, in certain contexts, generate new knowledge (Russell, 1994b, pp. 66–67). Nevertheless, this does not alter the fact that deduction has a limited capacity to produce new knowledge in everyday life or in the natural sciences.

As regards empirical generalizations such as "All human beings are mortal," Russell maintains that to assert "All S are P" about an empty class is logically true, since its falsity would require the existence of at least one S. Aristotelian logic, by contrast, treats universal propositions as if they implicitly involved existential commitment, thereby giving rise to fallacies. In other words, for Russell, all statements concerning the members of a class that has no members are taken to be true. To falsify a universal proposition—for example, "All human beings are mortal"—one must produce an existing counterexample; yet in the case of an empty set, no such counterexample exists (Russell, 2010, p. 63). For this reason, universal propositions can be satisfied by empty classes. Russell further maintains that while it is possible to conceive of worlds in which empirical generalizations are false, mathematical truths such as "two plus two equals four" hold in every possible world. Our belief in the proposition "All human beings are mortal," for instance, is based on the fact that no one has been observed to live beyond a certain age, together with physiological considerations. Yet it remains conceivable that there could be a world in which human beings are immortal. By contrast, a world in which two plus two equals five is nearly inconceivable, as it would violate a mathematical truth (Russell, 1994b, p. 66).

Russell also distinguishes between two kinds of universal propositions. The first consists of definition-based general propositions, such as "All Greeks are human." These propositions are learned solely from the meanings of words and convey no information about the world; they concern only linguistic usage. The second kind consists of general propositions supported by observation and induction, such as "All human beings are mortal." This proposition is not logically certain, since the existence of an immortal human being is not contradictory.

Nonetheless, we believe it on inductive grounds, given that no one has been observed to live for more than approximately 150 years. Even so, this belief remains probabilistic rather than certain (Russell, 1994a, p. 319), and it cannot become certain so long as human beings continue to exist (Russell, 2009, p. 253).

Russell adopts a critical stance toward the claim that deductive inferences add new knowledge. In the classical example—"All human beings are mortal; Socrates is a human being; therefore, Socrates is mortal"—it is questionable whether deduction genuinely contributes anything epistemically new. Russell analyzes this inference and arrives at the following conclusions. First, what we actually know is that certain particular individuals (A, B, C, and so on) are mortal, since they have been observed to die. If Socrates is among these individuals, then we do not need a general proposition about all human beings in order to assert his mortality. Second, appealing to a general proposition such as "All human beings are mortal" constitutes an indirect and unnecessary route. According to Russell, the available data provide a stronger and more direct basis for asserting Socrates' mortality. For this reason, he maintains that induction, rather than deduction, offers a more meaningful and epistemically robust method in such cases (Russell, 1994b, p. 67).

At this point, it is important to note that Russell's views on deduction vary across different periods of his work. One common criticism is that his position is internally inconsistent. However, this variation reflects not inconsistency but an evolution in his epistemological outlook. In *A History of Western Philosophy* (1945), Russell concludes that deductive inferences do not yield new knowledge, focusing especially on Aristotelian logical propositions and characterizing deduction as epistemically sterile. In *The Problems of Philosophy* (1912), by contrast, Russell emphasizes that deduction allows us to confirm or disconfirm particular cases on the basis of general principles. From this perspective, deductive knowledge possesses logical certainty, whereas inductive knowledge lacks such certainty and is grounded in probability. Russell therefore regards the confirmatory role of deduction as significant for securing the reliability of knowledge (Russell, 1994b, p. 89). He thus concedes that deduction can yield new knowledge in certain contexts, though this novelty is largely confined to domains characterized by certainty, such as mathematics.

According to Russell, mathematics, despite being a wholly deductive discipline, does not rely on syllogistic reasoning in its proofs. Mathematical demonstrations can be cast in syllogistic form, but such formulations are artificial and lack persuasive force (Russell, 1994a, pp. 318–319). Russell takes this as further support for his general critique of deduction. His criticism of Aristotle's logical framework is particularly severe: apart from the formal theory of the syllogism, Aristotle's logical doctrines are, in Russell's view, almost entirely mistaken, and even the theory of the syllogism itself is of little importance. Anyone wishing to

learn logic today, Russell claims, would waste their time by reading Aristotle or any of his followers (Russell, 2009, p. 257). In other words, Russell regards the study of Aristotelian logic as largely unproductive. While he concedes that learning traditional logic in Aristotle's own time may have been a commendable intellectual endeavor, he considers the teaching of such doctrines today to be a form of antiquarianism bordering on the absurd (Russell, 1968, p. 38). Nevertheless, Russell acknowledges the enduring influence of Aristotelian logic and observes that it took nearly two thousand years to overcome its dominance. In criticizing Aristotle, he thus also recognizes the extraordinary strength of Aristotle's hold on the history of logic (Russell, 1994a, p. 322).

In conclusion, Russell's critiques of deduction, induction, and Aristotelian logic offer a broader perspective on logic and epistemology. According to him, deduction is limited in its capacity to generate new knowledge and, outside special domains such as mathematics, contributes relatively little to epistemic advancement. Induction, though lacking certainty, is more valuable due to its potential to produce new knowledge. While Russell acknowledges the historical significance of Aristotelian logic, he insists that it must be transcended in order to arrive at a modern conception of logic. Classical logic, he argues, is inadequate both in its treatment of relations and in its account of knowledge production. Consequently, logic must be reconceived within a broader and more comprehensive framework.

5. Conclusion

Russell advances a profound and abstract critique of logic that aims to move beyond Aristotle. Propositions employed in Aristotelian syllogisms, such as "All humans are mortal," appear to express a general truth. However, Russell argues that such propositions do not, in fact, state anything directly about existence. According to him, the statement "All humans are mortal" may superficially seem to assert that there are humans and that all of those existing humans are mortal; yet, strictly speaking, it does not affirm the existence of any humans at all. Rather, it merely states that *if* there is a human, then that human is mortal. In this sense, the proposition does not contain an existential claim. In order to express something about existence, one would need to say, for example, "There exists at least one human, and that human is mortal." Russell's critique thus highlights the fact that Aristotelian logic does not clearly address the relationship between being and existence. For Russell, being and existence must be more carefully distinguished, and this distinction should be made explicit within logical systems.

Russell further maintains that generalized propositions such as "All humans are mortal" involve a kind of logical illusion. These propositions attribute a property to all individuals falling under the category "human," yet they do

not presuppose that such individuals actually exist. According to Russell, if a proposition is to convey genuine knowledge, it must say something about existence. For example, in the syllogism "All humans are mortal; Socrates is a human; therefore, Socrates is mortal," the statements "Socrates is a human" and "Socrates is mortal" are both individual and existential in character. By contrast, generalizations like "All humans are mortal" remain, in Russell's view, more abstract and incomplete. This criticism is closely connected to Russell's broader claim that logic requires modernization. In particular, within mathematical and modern logic, the concept of existence is articulated with greater precision. Thus, generalizations such as "All humans are mortal" are expressed in modern logic by means of quantification, for instance as "∀x (if x is human, then x is mortal)." Yet even this formulation does not assert that humans exist. To state that humans do exist, it is necessary to add an existential claim, such as "∃x (x is human)," yielding the combined formulation "∃x (x is human) ∧ ∀x (if x is human, then x is mortal)," which constitutes a more concrete and existentially grounded structure.

For Russell, propositions such as 'All humans are mortal' are logically incomplete unless their existential commitments are made explicit. Accordingly, the central idea underlying Russell's critique of traditional logic is that general propositions do not, by themselves, carry direct existential content. A genuine proposition, in his view, must say something about existence rather than merely offering an abstract generalization. Ultimately, Russell concludes that Aristotelian logic fails to make this crucial distinction, and that the syllogistic system built upon such generalizations—constituting the backbone of classical logic—is therefore fundamentally incomplete.

References

1. Anellis, H. I. (2009). Russell and His Sources for Non-Classical Logics. *Logica Universalis*, 3, 153-218.
2. Grünberg, T. (2007). *Epistemik Mantık Üzerine Bir Araştırma*. (1. Baskı). Yapı Kredi Yayınları.
3. Proops, I. (2007). Russell and the Universalist Conception of Logic. *NOUS* 41(1), 1–32.
4. Raab, J. (2024). Aristotle, Term Logic, and QUARC, (Ed. G. Englebretsen) (2024), *New Directions in Term Logic* (pp. 427-503), London: College Publications, 1-64. https://philpapers.org/archive/RAAATL.pdf
5. Russell, B. (1946/2004). *History of Western Philosophy*. London: Routledge.

6. Russell, B. (1956). Logical Atomism. (Ed. R. C. Marsh), *Logic and Knowledge: Essays 1900-1950*. Allen & Unwin, 323-343.

7. Russell, B. (1968). *The Art of Philosophizing*. Philosophical Library.

8. Russell, B. (1971). *Logic and Knowledge: Essays 1901-1950*. (Ed. R. C. Marsh). Caprıcorn Books.

9. Russell, B. (1993). Toward the "Principles of Mathematics," 1900–02, *The Collected Papers of Bertrand Russell*. (Volume 3), (Trans. G. H. Moore). Routledge.

10. Russell, B. (1994a). *Batı Felsefesi Tarihi İlkçağ*. (Çev. M. Sencer). Say Yayınları.

11. Russell, B. (1994b). *Felsefe Sorunları*. (Çev. V. Hacıkadiroğlu). Kabalcı Yayınevi.

12. Russell, B. (1996). *Dış Dünya Üzerine Bilgimiz*. (Çev. V. Hacıkadiroğlu). Kabalcı Yayınevi.

13. Russell, B. (1999). Felsefenin Özü: Mantık. (Çev. C. Yıldırım) *Mantık: Doğru Düşünme Yöntemi*, Ankara: Bilgi Yayınevi, 239-246.

14. Russell, B. (2009). *The Basic Writings of Bertrand Russell*. (Eds. R. E. Egner, L. E. Denonn & J. G. Slater,). Routledge Classics,

15. Russell, B. (2010). *The Philosophy of Logical Atomism*. London and New York: Routledge Classics.