

LOGIC, SCIENCE AND PHILOSOPHY FROM THE HUSSERLIAN CRITICISM OF PSYCHOLOGISM

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Abstract. This paper examines the relationship between logic, science, and philosophy through Edmund Husserl's critique of psychologism, with particular emphasis on the *Prolegomena to Pure Logic* and its role within the broader project of the Logical Investigations. It contends that Husserl's defense constitutes a decisive epistemological intervention aimed at securing the objectivity, necessity, and a priori status of logical laws. By situating Husserl's position in the intellectual debates, the analysis highlights the central distinction between the ideal and the real, showing how the purification of logic from empirical psychology underpins a rigorous conception of science and opens the path to phenomenology. Finally, evaluating the Husserlian framework's significance, the paper indicates the Husserlian relevance for contemporary discussions on logic, epistemology, and the foundations of scientific knowledge.

Keywords: psychologism • Edmund Husserl • pure logic • phenomenology • epistemology

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The importance of Edmund Husserl's thought cannot be underestimated. Developing the Husserlian philosophy, this paper does not only aim to resume the program of development of logic initiated by Husserl, or merely to offer means of correcting current errors in the foundations of sciences, but is also a historical rescue of the value of Husserl's work for epistemology.

The emphasis is on the lesser known, but important contributions to philosophy made by a philosopher [Husserl] who could very well be called “a philosopher for all seasons,” since his monumental and varied work—most of it unpublished, although more than forty volumes have been published—seems to touch on any philosophical problem (Rosado Haddock, 2012c, p.1).

In the context of this paper, it will be assumed that it is possible to identify common elements in Phenomenological philosophies and analytic philosophy. One theme that appears in this relationship is psychologism. The work *Prolegomena to Logical Investigations*¹ (*Prolegomena zur reinen Logik*) was so impactful that no one wanted to be called a psychologist anymore, at a time when the risk was considerable in the context of German thought, as Husserl himself experienced.



It seems difficult to understand Husserl's critique in logical terms alone, without reference to the epistemological question. Understanding the lessons left by the debates on this theme can bring contributions to the future of rigorous philosophy. In addition to the historical reflection and the wounds left by previous debates, the challenge is to analyze the impacts of overcoming psychologism on the reflection on logic and science, especially in a Phenomenological context (Vargas 2019).

1. The problem of psychologism in Husserl's historical context

Edmund Husserl is intelligible to the extent that he is placed in contrast with the philosophical culture with which he was polemicizing. In the case of the *Prolegomena*, his attack was against psychologism. To understand the proposal of the work *Logical Investigations* as a whole, it is necessary to understand the contrast of his proposal of pure logic compared with psychologism. Psychologist philosophers had a criterion of scientificity that was very dependent on empirical psychology, while Husserl had another conception of "certainty", which is fundamental to Husserlian thought (Kowalowski 2001).

Martin Kusch (2005) and Robert Hanna (2008) highlighted the importance of psychologism, in philosophical and sociological terms, for Germany at the turn of the 19th century to the 20th century: "*PL* [logical psychologism] was a widely spread conception in the second half of the 19th century [...] and is strongly associated with the origins of empirical psychology as an autonomous discipline" (Hanna 2008, p.28). Hanna defines logical psychologism as a way of denying that logic is a fundamental and independent science. In this case, the philosophical explanation of logic would be reducible to empirical psychology. For Hanna (2006), the debate on logical psychologism at the turn of the 19th century to the 20th century was decisive in the subsequent development of philosophy and psychology, enabling the development of analytic philosophy and scientific psychology.

If, in English culture, logical psychologism began from empiricist philosophy, in German philosophy, psychologism began from a post-Kantian and post-Hegelian debate (Santos, 2010). Massimo Libardi (1997) indicates the work *System of Logic* (*System der Logik*), by Jakob Fries, published in 1811, as a reference for the beginning of psychologism. However, Kusch (1991; 2005) stated that the term psychologism was introduced by the Hegelian Johann Erdmann (1866), in his research on the history of philosophy, to characterize the thought of Friedrich Beneke. In opposition to Hegel's idealism, Beneke followed Fries' psychological empiricism and established psychology as the basis of philosophy. Given the prominence of psychology among the empirical sciences, which was already evident in Fries' work, Beneke conceived

the foundation of all philosophy in psychology (Abbagnano 1994, pp.143–148).

Jitendra Mohanty observed that the interest and difficulty of the antipsychological controversy occurs, in part, due to the ambiguity of the term psychological, which “may mean the mental as such, or it may mean the mental as thematized in the science of psychology, or it may apply [...] to the propositions stating laws or law like connections within the psychological discourse” (1989, p.2). Due to the ambiguity of the use of the notion of “psychological”, the psychological thesis may assume different meanings. Another difficulty in the interpretation of psychologism is that its defenders generally do not call themselves psychologists. The terms “psychologism” and “psychologist” are most often used by critics when identifying the objects of their analyses, taking on a pejorative meaning due to the criticisms of Paul Natorp, Gottlob Frege and Edmund Husserl (Kusch 2005; Niel 2014).

More than a homogeneous philosophical school, we can speak of a trend in 19th-century philosophy, which can be exemplified in the works of Stuart Mill, Wilhelm Wundt, Theodor Lipps and Christoph von Sigwart. Leaving aside historical controversies, it is clear that the term psychologism continued to be used, becoming a kind of ideology inspired by psychology. Since then, philosophers have created new meanings for the psychological foundation of philosophy and philosophical disciplines in general² (Niel 2014). Among these various possible definitions of psychologism, it would be very difficult for a philosopher, especially in Germany at the beginning of the 20th century, not to be accused of being a psychologist: “it becomes understandable that it was practically impossible for a philosopher between 1900 and the First World War to avoid being accused of being a psychologist” (Kusch 1991, p.49). The discussion on logical psychologism reveals that many philosophers have grappled with similar concerns, often facing accusations of psychologism themselves while criticizing it.

As can be seen in the history of contemporary philosophy, psychologism is a complex phenomenon. There are several gradations of psychologism, as Husserl exemplified in the *Prolegomena*, and in the works of John Stuart Mill, Christoph von Sigwart, Theodor Lipps and Wilhelm Wundt. When it is stated, for example, that the laws of mathematics and logic are justified by the psychological mechanisms that allow us to think about them, we can refer to thinkers who understand logic as a kind of “technique” or “art” that teaches the correct way of reasoning up to extreme forms that identify the entities of thought as the object of logic (Hua XVIII; Kockelmans 1994, p.35; Niel 2014). The analysis of psychologism, in general terms, is also affected by the ambiguity of philosophers in relation to the subject, as can be exemplified in the work of John Stuart Mill³ (1882). The English philosopher combined psychological and antipsychological elements, according to the analyses of David Godden (2005) and Martin Kusch (2014): “Mill held an equivocal view of the subject matter of logic, sometimes treating it as a set of psychological processes and at other times as the object of these processes” (Godden 2005, p.115).

1.1. Predecessors of Husserlian antipsychologism

When the author of the *Prolegomena* (Hua XVIII, §13) raises the question of logic as a science, he asks himself whether the discipline discussed is a priori or empirical, demonstrative or non-demonstrative, dependent or independent. On the side of those who defend logic as a practical art, the philosopher cites John Stuart Mill, Friedrich Beneke and Christoph von Sigwart, who presented his psychologist conception in the work *Logic* (Logik). Among those who defend logic as a science, Husserl (Hua XVIII, §13) cites Immanuel Kant and Johann Friedrich Herbart (1776-1841). In the conclusions of the critical considerations of the work, the author comments about great thinkers of the past, including Rudolf Lotze and Leibniz. Luis Niel (2014) points to Johann Herbart, Bernard Bolzano and Lotze as three predecessors of the antipsychologism of Edmund Husserl and Gottlob Frege in 19th-century German philosophy. Each of these philosophers presents some contribution to the refutation of attempts to found logic in psychology.

In the case of Herbart (1837), one can cite, as a reference in antipsychological thought, his work *Textbook of Introduction to Philosophy* (*Lehrbuch zur Einleitung in die Philosophie*), which will be cited as *Textbook*. It was published in 1813, dealing with logic, aesthetics, philosophy of values and metaphysics. In the second section of the *Textbook*, the author presents a categorical separation between psychology and logic, which was highlighted in the fourth edition, published in 1837 (Niel 2014). Herbart explains the difference between the psychological aspects of the activity of the “spirit” (“*Geist*”) and the “concepts” (“*Begriffe*”) that are thought. For the philosopher, logic must ignore all psychological aspects of thought, limiting itself to the forms of possible connections between the objects thought of. Luis Niel (2014) identifies a Platonic element in Herbart’s thought (1837), when the philosopher explains that the logical value of a judgment does not lie in psychological facticity. For Herbart, the thought of a given concept can be repeated in different ways, in different practical circumstances, described by psychology. However, the concept itself presents an intelligible unity, which does not multiply according to empirical thought.

In the *Textbook*, in the section on metaphysics, Herbart (1837) also explains that the philosophical description of the “fundamental concepts” (“*Grundbegriffe*”) of science should not be confused with the investigation of the psychological origin of thought representations. Once again, Niel (2014) identifies a Platonic trait in Herbartian thought by basing science on concepts that are not empirical, but are understood as ideal units. Herbart also refers to Plato as the great philosopher of antiquity, in view of Plato’s identification of the object of knowledge with an immutable being. Herbart (1837, §§143–148) develops his commentary on Platonic metaphysics in the fourth chapter of the fourth section of the *Textbook*, where he explains Platonic ideas as “absolute qualities” (“*absolute Qualitäten*”), differentiating the domains of intelli-

bility and sensibility. For Herbart, the Platonic genius was to realize that the object of authentic knowledge is in ideas or essences, but his thinking was distorted by those who understood ideas as mental “representations” (“*Vorstellungen*”) (Niel 2014).

The Herbart’s successor at the University of Göttingen was Rudolf Lotze, who also developed logic from an antipsychological perspective. Lotze’s research was situated in the context of the project of a system of philosophy, which would include ontology, cosmology and psychology. The work *Logic (Logik)* was divided into three books, which dealt with thought (“pure logic”), “investigation” (“applied logic”) and “knowledge” (“methodology”). In the third part of *Logic*, “on knowing” (“*Von Erkennen*”), Lotze (1884) takes a stand against psychologism on the basis of an original interpretation of Plato’s theory of ideas in a chapter suggestively entitled “*the world of ideas*” (“*Die Ideenwelt*”). Lotze distinguished between the psychological act of thinking and the content (“*Inhalt*”) of thought. If psychology explains the origin of thought as a temporal phenomenon, logic analyses its validity in terms of the fundamental principles of pure or formal logic. Lotze (1884) also presents psychological analyses of the formation of concepts, but he emphasizes that an authentic logic of validity must focus on the logical units of meaning, which are entities independent of the sensible, real and psychological aspects. According to Lotze’s interpretation of the Platonic doctrine of ideas, the logical principle of validity predates the empirical explanations of psychology (Niel 2014).

Bernard Bolzano can be considered a milestone in the beginning of antipsychologism, although the central theme of his criticism is skepticism⁴ (Porta 2004, p.110). *Theory of Science* (Bolzano 1973, p.53) cites the *Textbook* in the explanation of the theory of fundamental truths, to reinforce the argument of the separation between logic and psychology. Luis Niel (2014) states that Bernard Bolzano defined his antipsychologism in the analysis of logical objects presented in the work *Theory of Science* (“*Wissenschaftslehre*”). The distinction between the objective and subjective aspects of science is evident in the organization of the work *Theory of Science* (Mora 2004, p.339). On the one hand, the first two volumes (Bolzano 1973, §§1–268) deal with science in its *ordo essendi* (“order of being”), that is, following the essential order of how truths, propositions and representations are “in themselves”. On the other hand, the last three volumes present a “theory of knowledge” (“*Erkenntnislehre*”) that presents science in its *ordo cognoscendi* (“order of knowing”), that is, showing how science is known (Porta 2004).

Bolzano’s philosophy is associated with his efforts to establish the foundations of mathematics, where he stood out for his work on the arithmetization of analysis. Jan Berg (1973, p.30), in the introduction to the translation of *Theory of Science* into English, highlighted Bolzano’s goal of rethinking the whole of contemporary mathematics in accordance with his philosophical conception of science and its fundamental elements. Analyzing *Doctrine of Science*, it is clear that, for Bolzano, “representations

in themselves” (“*Vorstellungen an sich*”) and “propositions in themselves” (“*Sätze an sich*”) do not depend on any empirical determination, but are valid in themselves as units of meaning. Since ideal units of meaning “in themselves” are not mental representations, they are not objects of psychology or any other empirical science. Logic, therefore, does not require a thinking subject, since its objects of study are not psychic phenomena. In the case of the proposition in itself, Bolzano (1973, p.48) explains that it is the purely logical meaning of a sentence, regardless of whether it was thought, whether it was expressed in words or whether it is true or false.

In the history of antipsychologism, Paul Natorp is also remembered with some prominence. Joseph Kockelmans and Marvin Farber, for example, recalled Natorp’s 1885 critique of *the fundamental facts of mental life* (“*Die Grundtatsachen des Seelenlebens*”), which Theodor Lipps had published in 1883. For Lipps, psychology formed the basis of philosophy, including logic and the theory of knowledge, which would be a branch of psychology. The laws of knowledge must be deduced from the facts of psychic life, including the psychological foundation of the principle of non-contradiction. Natorp highlighted the importance of the objectivity of science, overcoming subjectivity: “he formulated, as a presupposition of objective science, the precept that true scientific knowledge can depend only on those laws which offer certainty from the inner connection of science and which are developed in logical form, independently of all presuppositions that might be introduced from elsewhere” (Farber 2006, p.6).

In Paul Natorp (1977), the refutation of psychologism was clear, but he did not go as far as Husserl,⁵ to the point of suggesting the idea of a universal science that would be the foundation of philosophy itself, as was the purpose of phenomenology. In the Husserlian view (Hua XVIII), even those who conceived logic as a discipline independent of psychology, following in the footsteps of Kant and Herbart, did not achieve sufficient clarity about the essential and *a priori* limits of logic. For Husserl (Hua XVIII), none of the antipsychologists who preceded him achieved the philosophical clarity about logic in the sense of a theory of meaning and object that he obtained in *Logical Investigations* (Farber 2006). However, Husserl recognized the merits of the neo-kantian Natorp, who independently maintained a conviction about the unity of logic and mathematics (Smith 2007).

The importance of Gottlob Frege’s philosophy deserves to be highlighted insofar as it relates more directly to the controversy over the relationship between logic and psychology, which is at the heart of the problem of psychologism, being “associated with the emergence of a new stage in the development of mathematical logic. The stage is characterized by the axiomatic treatment of propositional calculus, the establishment of the foundations of the theory of mathematical proof and the formulation of the beginnings of logical semantics” (Styazhkin 1969, p.264). The Fregean philosophy of mathematics is fundamental in the debate on psychologism, because Frege contributed to the development of logic with his theory of quantification and

presented a refutation of psychologism that can be identified in his various works⁶ (Rosado Haddock 2006a).

In *Conceptography, a Formula Language of Pure Thought Modeled on that of Arithmetic*⁷, which will be cited as *Begriffsschrift*, a work originally published in 1879, in Halle, Frege (1879) develops a methodology of symbolic logic to exclude psychological and subjective processes from logical demonstrations. The author clearly distinguishes the scope of logic and psychology: “we divide all truths that require proof into two kinds: those whose proof can be conducted by purely logical means and those whose proof is based on empirical facts” (Frege 2009, p.44). In the *Basic laws of arithmetic: derived using concept-script*⁸, a work originally published in two volumes, Frege (1893) projects the reduction of arithmetic and analysis to logic and presents distinctions related to logical and psychological laws, which can be descriptive or normative. The author intends to show contradictions of psychologists who tend to take the appearance of truth as the truth itself. Frege criticizes psychologists for considering the domain of “non-real” knowledge as merely subjective, as if logical laws only referred to “beliefs” or subjective representations.

Kevin C. Klement (2001, p.2) recalled the influence of Carl Stumpf⁹, who would later become Husserl’s professor in Halle, on the publication of *The Foundations of Arithmetic: a logical-mathematical investigation into the concept of number*,¹⁰ which will be cited as *Grundlagen*. According to Klement, Stumpf suggested that, after the “poor reception” of the *Begriffsschrift*, Frege should write a work in “ordinary language” criticizing rival philosophical conceptions. In *Grundlagen*, a work originally published in Breslau in 1884, Frege explains that number is not something subjective, nor is it an empirical property of “external things”. He also argues that the laws of arithmetic are not “inductive truths” and states that “arithmetic has absolutely nothing to do with sensations” (Frege 1974, p.201). According to the author, logic and mathematics are not part of psychology. Therefore, logical and mathematical laws are not explained by psychological methods (Kusch 2014; Vargas 2015, 2018). Gottlob Frege (1884) highlights, in *Grundlagen*, the criticism of Stuart Mill’s philosophy of mathematics, as can be exemplified in the excerpt below:

Mill’s conception necessarily leads to the requirement that a particular fact be observed for each number, because in a general law the peculiarity of the number 1000000 would be lost, which necessarily belongs to its definition. In fact, according to Mill, one could not affirm that $1000000 = 999999 + 1$ if one had not observed precisely that peculiar way of decomposing a collection of things, different from that which is appropriate for any other number (Frege 1974, p.211).

In analyses of Husserlian development, it is observed that Frege’s influence on Husserl has been discussed for decades (Vargas 2015; 2018). Claire Ortiz Hill (2002a), from a critical perspective, attributed the number of writings relating Husserl and

Frege to the enthusiasm that so many commentators feel towards Frege's work, as well as to the desire to recognize some links between Husserl's ideas and analytic philosophy. In historical terms, it can be noted that Husserl is one of the first to receive the influence of Frege (1884), even before writing *Philosophy of Arithmetic* (*Philosophie der Arithmetik*). If Frege influenced Husserl on the issue of psychologism, it was more related to his reading of *Grundlagen* in the 1880s (Ierna 2012).

The famous review written by Frege (1977, p.11) about Husserl's *Philosophy of Arithmetic* was very critical, classifying Husserl (Hua XII) among the "psychological logicians": "I was able to appreciate the devastation caused by the influx of psychology into logic [...] The errors, which I thought it was my duty to show, reflect less on the author than they are the result of a widespread philosophical disease" (Frege 1977, p.21). However, "much, in fact, still remains to be rectified regarding Frege's review, the uncritical reading of which has unfairly distorted philosophers' perception of a work that they do not know very well" (Hill 2002a, p.86). However, we can question if the debate over the influence of Frege's review (1977) on the development of Husserl's philosophy of mathematics was so important as Husserlian and Fregean commentators generally point out (Vargas 2018):

With respect to Frege's review, Husserl did not react at all. Indeed, when he took up his correspondence with Frege again a few years later, judging from Frege's replies, he did so in the same friendly tone as before the review, as if nothing untoward had happened. While I would agree that Frege's review did not radically influence Husserl, I do not think that we can conclude from this that Frege did not influence Husserl at all (Ierna 2012, pp.110–111).

It is possible to problematize and compare Husserl and Frege's criticisms of psychologism (Kusch 2005; Rosado Haddock & Hill 2000). In Mohanty's interpretation (1989, p.3), Husserl and Frege criticized psychologism because it based the truths of logic on the more or less probable generalizations of psychologies that thematized the mental as a private and discrete event that related to other events through psychological laws of association (Mohanty 1989; Santos 2010). Among the various meanings of psychologism (Kusch 2005), Mohanty identifies that Husserl and Frege criticized the following thesis: "that all knowledge must ultimately be analyzable into components that empiricist psychology assumes mental life consists of, such as ideas or representations" (Mohanty 1989, p.2).

Michael Dummett, for example, in the preface to the English edition of *Logical Investigations*, made a brief comparison between Husserl and Frege, showing the points of similarity between the two thinkers at the turn of the century (Dummett 2003). Both maintained that logic is essentially a theoretical discipline and can be considered, in a certain sense, logicians in relation to the philosophy of mathematics¹¹ (Miller 1982, p.4). However, Dummett notes that the thoughts of both followed

very different paths: Husserl continued to investigate the intuitions of essences and influence the Phenomenological school, while Frege dedicated himself to language, influencing the *analytical philosophical school*¹².

2. The Husserlian answer against psychologism

In no domain of knowledge has error been more disastrous, in no domain has the confusion of concepts hindered the progress of knowledge and even its beginnings more, and made it more difficult to understand true objectives, as in the domain of pure logic (Hua XVIII, p.246).

The development of mathematical logic in the 19th century also brought new elements to the philosophical understanding of logic. In this historical context, it is necessary to consider the philosophical ambiguity of the term “logic” (Da Costa 2008, p.16). In the context of the *Prolegomena*, one of the ambiguities arises from the distinction between theoretical, practical and normative logic. For Husserl, science is primarily theoretical and, secondarily, normative: “logicians in fact fill up large volumes without once saying that anyone ought to do anything at all” (Willard 1977, pp.10–11). Normative logic also has its legitimacy, but it presupposes this theoretical logical discipline, which is more prior and fundamental (Hua XVIII).

The traditionally controversial questions concerning the delimitation of logic are the following: 1. Whether logic is a theoretical or practical discipline (i.e., a “technique”). 2. Whether it is an independent science, and in particular, independent of psychology or metaphysics. 3. Whether it is a formal discipline or, as is commonly held, whether it concerns only the “mere form of knowledge” or whether it must concern its “matter” itself. 4. Whether it has the character of an a priori and demonstrative discipline or an empirical and inductive one (Hua XVIII, §3, p.23).

Edmund Husserl, in *the Prolegomena*, defined the problematic of the debate on psychologism in terms of a discussion on the status of logic as a discipline (Hua XVIII, §3). In the introduction to the work, the author already anticipates what the result of his research will be:

The result of our investigation in this respect is the isolation of a new, purely theoretical science, which constitutes the most important foundation for the entire technique of scientific knowledge, and possesses the character of an a priori science [...] As the final result of these reflections, an idea of the essential content of the controversial discipline is clearly outlined, by which a clear position on the questions raised is automatically provided (Hua XVIII, p.24).

The psychological controversy presented in the *Prolegomena*, therefore, concerns the “delimitation of logic” (Hua XVIII, p.12). Rather than taking part in a controversy, Husserl claims that he intends to shed light on the differences between the perspectives involved in the discussion (Hua XVIII, p.23). Husserl’s goal, announced in the introduction to the *Prolegomena*, is “a clarification of the essential objectives of a pure logic” (Hua XVIII, p.23). Despite the focus on the “theoretical foundations” of logic, Husserl recognizes that his goal of a “new foundation of pure logic” (Hua XVIII, p.7) is closely related to the “theory of knowledge.” Such questions about logic “cover, in essence, if not completely, at least in a major part, the capital questions of the theory of knowledge concerning the objectivity of knowledge” (Hua XVIII, p.23).

Because of the terms in which he posed the question of logical psychologism at the beginning of *Prolegomena* (Hua XVIII, §3), the author needs to define whether logic is independent or dependent on empirical psychology. Therefore, he needs to establish or deny a relationship between logic and psychology in the sense of their dependence, considered as sciences. He could only do this by having a conception of science, emphasizing, in this case, the role of logic or psychology in the foundation of the sciences. If logic depended on psychology, it would have an accuracy proportional to psychological accuracy, as will be analyzed below (Hua XVIII, §22). However, logic possesses a certainty that is not subject to empirical criteria. Pure logic does not depend on indefinite events or vague circumstances:

The laws called logical in the full sense, laws which, as laws of foundations [...], constitute the very core of all logic: the logical “principles”, the laws of syllogistics, the laws of the various other types of induction ¹³ [...], the principles of probability calculations, etc., possess absolute exactness; any interpretation which attributes to them empirical indeterminacies, which seeks to make their validity dependent on vague “circumstances”, would profoundly alter their meaning. These laws are, clearly, genuine laws, and not “merely empirical” rules, i.e., approximate rules (Hua XVIII, p.73).

There is an ontological distinction in *Prolegomena* between the real and the ideal, as highlighted, for example, by José Gaos (2007). However, *Prolegomena* does not deal specifically and primarily with ontology, but is a discussion about logic, which must be highlighted and distinguished from other aspects of the discussion (Hua XIX/1, Hua XIX/2). Refuting logical psychologism is a task that Husserl proposes with a philosophy of logic that culminates in the description of pure logic, paving the way for a later phenomenological elucidation, based on other logical investigations. The distinction between ideal and real is fundamental in Husserlian argumentation and implies the epistemological question. The separation between objectivity and subjectivity “raises the new problem of explaining the link between them” (Porta 2004, pp.121–122). In the *Prolegomena*, Husserl needed to point out the importance of the problem of the relationship between the domains of the ideal and the real.

However, Husserlian response could not seem psychological, requiring some caution in approaching the issue (Tourinho 2014b, p.576).

Edmund Husserl identified, in *the Prolegomena* (§28), that several cases of psychologism from the end of the 19th century proceed from well-intentioned attempts to clarify psychologically the “laws of thought”, confusing the boundaries between the domains of the ideal and the real. Such efforts can be exemplified in the work *Logical Studies* (“*Logische Studien*”), published in 1877 by Friedrich Lange, which psychologically reinterprets logical laws, even without explicitly characterizing them as psychological laws. Husserl manages to perceive, in such works, psychological explanations for logical questions. One example is the case of the supposed duplicity of the principle of non-contradiction. This principle is understood, by Lange (1877), as a normative logical law and as a law of natural thinking. In the *Prolegomena*, Husserl accuses the confusion of the boundaries between the ideal and the real. For the author, the significant content of a logical law has no direct or indirect relationship with empirical and factual statements:

We vehemently protest against the confusion of this vague empirical generality with the absolutely exact and purely conceptual law that only has its place in logic; we consider it categorically nonsensical (sic) to identify them, to derive one from the other, or to make them coalesce in the supposedly dual law of contradiction (Hua XVIII, p.105).

Following Husserlian reasoning, the main error of psychologism would be related to the lack of some fundamental philosophical distinctions (Hua XVIII, §25): a) the distinction between real necessity and logical necessity, as well as the real foundation and the logical foundation; b) the distinction between the ideal plane (which encompasses logical and mathematical entities as atemporal) and the real plane (which includes entities that depend directly on spatial and temporal conditions), as highlighted by Carlos Tourinho (2014a, p.135), who criticized the confusing of the ideal and real domains.

In 1903, in the review of the work *The Dispute between Psychologists and Formalists in Modern Logic*¹⁴, by Melchior Palágyi, Husserl (Hua XXII, p.159) would still explain that the fundamental error of psychologism lies in the confusion of the differences between the domains of pure and empirical laws, interpreting “purely logical laws” (“*die rein logischen Gesetze*”) as empirical and psychological laws. The answer to the relationship between ideal and real in the *Prolegomena* needs to be established by overcoming logical psychologism, in terms of the conception of logic itself and scientific knowledge. In this context, the theory of probability and the foundation of empirical sciences are also important in delimiting the domains of the ideal and the real (Santos 2010, p.157; Vargas 2022). Developing his critique of logical psychologism, Husserl will take the path of distinguishing between ideal science, totally a

priori, which studies ideally founded general concepts and laws, and, on the other hand, real science that formulates factual laws, such as those that govern concrete psychic life. Thus, pure logic analyzes objective and ideal relations, leaving aside psychic phenomena. For Husserl, it would be necessary for logic to be purified of any relationship with empirical psychology. In the review, Edmund Husserl (Hua XXII, p.159) explained that each “pure law of logic”, insofar as it expresses universal connections, can refer to ideal extensions. From each “ideal law” (“*Idealgesetze*”), such as an arithmetic law, for example, universal truths about ideally possible or impossible connections of a psychical or empirical fact can be derived¹⁵. Thus, the “character” (“*Charakter*”) of each of these ideal laws, as “truth of reason” (“*verité de raison*”), is transmitted to its derivations without being affected in its ideality.

Edmund Husserl’s critique of psychologism, particularly in his *Logical Investigations*, sought to demonstrate that logical principles cannot be reduced to psychological facts. He argued that logic deals with ideal, objective entities—such as propositions, meanings, and truths—that exist independently of human minds. According to Husserl, the validity of logical laws is not contingent upon the psychological states of individuals. In the context of the *Prolegomena*, Husserl differentiated logic and psychology, which were the two main “candidates” for the foundation of logic. In this philosophical task, the author radically differentiated the domains of the ideal and the real, with pure logic dealing with the former and the empirical sciences, including psychology, dealing with the latter sphere. However, the empirical sciences borrow logical and mathematical elements from the sphere of the ideal, which go beyond the simply theoretical aspect of pure logic, but broaden its conception in probabilistic terms.

2.1. Repercussions of “*Logical Investigations*”

In the posthumously published draft of the preface to the second edition of *Logical Investigations* (Hua XX/1, pp.272–330), which will be cited as *Vorrede*, Edmund Husserl (Hua XX/1) claimed that his critics had misunderstood him and that some important explanations for his refutation of psychologism were to be found elsewhere in the *Logical Investigations* (Hua XIX/1, Hua XIX/2). There was some confusion in the reception of the second German volume of *Logical Investigations*, when it was identified with psychologism, especially after the use of the term *descriptive psychology* to characterize phenomenology in the first edition of the cited work¹⁶ (Porta 2004, pp.120–121). Guillermo Rosado Haddock (Rosado Haddock & Hill 2000, p.199) classifies the confusion about Husserl’s philosophical stance as a “*historiographical myth*”. If there are psychological methods and concepts used in the *Philosophy of Arithmetic* that remained in the *Logical Investigations*, there are also new elements that bring a new conception of logic¹⁷ (De Boer 1978, pp.60–5, 82–90; Miller 1982, pp.7–8).

Martin Kusch¹⁸ (1991) highlights the importance of the *Prolegomena* for the contemporary debate on psychologism: “the natural starting point for a historical reconstruction of the controversy over psychologism are the contemporary reactions to Husserl’s work *Logical Investigations* (1900). After all, this book was the fundamental text in this debate” (Kusch 1991, p.47). Kusch observes that the “sociological” importance of the *Prolegomena* does not correspond to a universal philosophical recognition, finding reticence in the assessments of Paul Natorp, Wilhelm Wundt, Melchior Palágyi and Wilhelm Schuppe, who did not recognize the originality of his criticisms¹⁹: “interestingly enough, there was no agreement among German philosophers at the time on whether Husserl’s arguments were decisive or whether they were new and original” (Kusch 1991, p.47).

Natorp (1977) had already criticized Husserl (Hua XVIII) for finding psychologism in explicitly antipsychological authors. Natorp noted that it is possible to find psychological aspects in any author, including Husserl. The neo-Kantian philosopher rejects Husserl’s reading of Immanuel Kant’s work in the *Prolegomena*. Mohanty (1999) compared various responses²⁰ offered to Husserl’s *Prolegomena* and concluded that Wundt’s (1910) commentary was the most “negative” or critical. Massimo Libardi (1997, p.320) also highlighted the importance of Wundt’s critique, which accuses Husserl of adopting a logicism that harks back to speculative metaphysics. He also accuses Husserl of arriving, with his descriptive psychology, at a form of “rational psychology” in the scholastic style, concerning the meanings of words. For Wundt (1910), Husserl’s conception of mental content is completely formal and empty of content, that is, alien to an empirical scientific conception. The psychologist accuses Husserl of having created the notion of “ideal meaning”, but that there is no invariant meaning. Wundt only recognizes, in his former student Husserl, the critical capacity, but does not recognize his positive theses. The psychologist recognized the importance of Husserl’s appeal to evidence, but understood this concept as a psychological phenomenon, differently from the intention of the author of *Logical Investigations*.

Husserl’s position in the philosophy of logic and mathematics is more complex²¹ than what was analyzed by Wundt. If Natorp (1977) and Wundt (1910) identified Husserl’s notion of evidence as psychological, but Jitendra Mohanty (1999) recalled that, in the *Sixth Logical Investigation*, Husserl (Hua XIX/2) presents a clarification of what he understands by evidence, leaving no room for psychologism. Robert Hanna (2006) also observes that Edmund Husserl and Gottlob Frege knew how to describe the consequences of the logical psychologism that they sought to avoid, but, even so, they were not able to prove the error or falsity of the psychological theses, since they did not prove the need for their epistemological assumptions in relation to logic. According to Hanna (2006), it is not enough to show that logical psychologism leads, for example, to relativism. The most fundamental problem, in order to avoid falling into

a *petitio principii*, would be to prove the assumptions of Husserlian antipsychological criticism, that is, that logic really is necessary, *a priori* and objectively true.

But as far as I can determine, Frege and Husserl always claim only that logic is absolutely necessary and so on, but never attempt to prove these claims independently [...]. Therefore, even if they are entirely correct about the nature of logical psychologism and its consequences, they ultimately fail to provide non-circular arguments against psychologism, which is to say that they ultimately fail to provide convincing arguments against psychologism (Hanna 2006, pp.3–9).

Christoph von Sigwart (1904) defended himself against Husserlian criticisms by reaffirming his position that “truth” requires an intelligence that thinks it true. For Sigwart, true and false are properties relative to opinions that necessarily presuppose a thinking mind. He claims that the hypostatization of propositions into autonomous essences is a “mythology”. Sigwart also questions how it is possible to acquire knowledge about logic if the process of psychological thought does not lead to logical cognition. Sigwart concludes that the Husserlian position leads to a dual conception of consciousness: on the one hand, there is an empirical and real consciousness independent of logical laws and, on the other hand, there is an ideal consciousness that grasps timeless truths. He criticizes the fact that the Husserlian concept of psychology does not reach logical necessity, since it only studies mental phenomena according to causal laws in terms of vague empirical generalizations. On the other hand, Sigwart (1904) considers that the notion of “evidence” is contradictory in relation to the Husserlian notion of pure logic. Sigwart argues that evidence would be an empirical psychological fact, that is, a mental state experienced temporally.

In *Vorrede*, Edmund Husserl (Hua XX/1) acknowledged that he made every effort to ensure that readers of *Logical Investigations* would recognize the ideal sphere of being and knowledge. Husserl criticized those who failed to understand his work and limited themselves to seeing a *psychology of immanence* in *Logical Investigations*. The philosopher noted that *Prolegomena* dissociated psychology and logic, but a complete answer, involving the pertinent epistemological questions, requires consideration of *Logical Investigations* as a whole:

‘*Prolegomena zur reinen Logik*’, far from solving any problem, were merely aimed at explaining the fundamental bases of the same, which were to be solved in volume II [...]. Husserl writes that, to the extent that the psychological foundation of logic and mathematics fails because it is unable to account for objectivity, he found himself obliged, to an increasing extent, to engage in general critical reflections on the essence of logic and, first of all, on the relationship between the subjectivity of knowing and the objectivity of the known content (Porta 2004, pp.121–122).

If the theme of psychologism seems to follow the development of Husserl's work (Porta 2013; 2014), it can be added that there is a contemporary debate regarding Husserl's criticism of psychologism²². Despite the various expressions of solidarity with Husserlian arguments, it can be seen from Husserl's own later self-criticism (Hua XVII, Hua XX/1) that the position of *Prolegomena* is still, in a certain sense, unsatisfactory and incomplete. In order to refute logical psychologism, Husserl needed to differentiate pure logic and psychology, but he did not develop all the necessary elements of his antipsychological reasoning in *the Prolegomena* alone. José Gaos (2007) observed that Husserl could only establish the notion of phenomenology depending on the philosophical acceptance of the existence of the "ideal object", but, ironically, this distinction between the concepts of ideal logical laws and empirical real laws has been seen as a starting point for the supposed psychologist elements in Husserlian philosophy: "typically, critics saw psychologism emerge in Husserl because Husserl had drawn the distinction between logic and psychology in terms of two kinds of laws: ideal logical laws, known to us in and through apodictic evidence (*"apodiktische Evidenz"*), and real laws of nature, known through induction" (Kusch 1991, p.48).

Reflecting about the distinction between ideal and real laws in Husserl's argument, Martin Kusch (1991) questions how ideal entities can be known. Husserl presents a Phenomenological theory about the conditions of knowledge of logical and mathematical objects in the sixth logical investigation, but what can be questioned is the necessity or contingency of ideal entities, as was also observed by Gaos (2007) as the most definitive limitation of Husserl's critique of psychologism:

The culminating point of criticism is, in effect, the one in which the direct appeal converges to the evidence and exactitude of logical laws. . . as laws of ideal objects, and the conflict of skepticism as a contradiction. . . , supposes the need for the ideal being: that point, in conclusion, that plants the problem of the self and the skeptic. . . 'may stop' from 'putting' the ideal being or 'having it' that 'recognizes' it'. The ideal being is not apodictic, demonstrated, problematic, philosophical questions²³ (Gaos 2007, p.148).

After the publication of *Logical Investigations*, Paul Natorp (1977) had questioned whether Husserl had established his argument decisively or whether he had simply raised the issue against psychologism.²⁴ Natorp's main criticism of Edmund Husserl is that the problematic of pure logic would be left in an unsatisfactory situation (Mohanty 1999). After radically separating logic and psychology, Husserl needs to relate these disciplines in some way. His emphasis on ideal structures raised questions about the accessibility and applicability of such structures to the empirical world. Critics have pointed out that Husserl's sharp division between the ideal and the empirical could lead to difficulties in explaining how logical principles relate to actual

human reasoning and scientific practice. Natorp (1977), in his review of *Logical Investigations*, recognized the value of Husserlian anti-psychological arguments, but philosophically questioned the validity of the absolute separation between real and ideal or between the psychological and the logical. He agrees with Husserlian conception of pure logic, but adds that logic cannot only be “formal”, but also needs to be “material”:

There also remains unresolved, in Husserl, the opposition between formal and material, a priori and empirical, and along with it that between the logical and the psychological, the objective and the subjective; or, to put it in one word and at the same time in his own terminology: the ideal and the real. The material, empirical, psychological i.e. the ‘real’ remains an uncomprehended, irrational deaf; the question about the relationship, the inner, epistemological and also the logical bond between the two is not at all raised, but with their sharp and pure separation the problem is laid to rest. And therefore, In spite of all the extraordinary lucidity of each special logical discussion — I venture to say — the reader is left with a certain logical dissatisfaction. One follows the dramatically tense struggle between the two opponents, and yet does not see, where precisely is the root of their opposition, what precisely is that which makes this life and death battle necessary; but there with an exact reciprocal relationship even an inseparable belonging together between the two shows itself more and more (Natorp 1977, pp.65–66).

Paul Natorp (1977) anticipated, in neo-Kantian terms, a critique of the logic of the *Prolegomena*, which Edmund Husserl (Hua XVII) would recognize in *Formal and Transcendental Logic: attempt at a critique of logical reason*:²⁵ apophantic formal logic is based on a pure logical grammar, which, in turn, cannot be just a pure theory of syntax.²⁶ However, it is necessary to have a counterpart in the “logic of truth”, which takes into account a structuring that avoids contradictions such as “virtue is green”. The criticism of psychologism does not eliminate the philosophical question of subjectivity. If Husserl was criticized as a psychologist for the relationship he made between logic and phenomenology, Mohanty (1989) had already observed in what sense a Phenomenological philosophy is not psychological, despite being concerned with the constitution of the “mental”:

The thesis of intentionality—intentionality—implies that the intentional act is not merely a real, inner, experience; it is *ab initio* directed beyond and has an ideal sense. Thus the structure of intentionality provides the unity in which the real-ideal distinction is made [...]. I have tried to show why Husserl, while never abandoning the antipsychologism of the *Prolegomena*, could not rest at that point. (Mohanty 1982, p.39)

3. Logic and science from the criticism of psychologism to the development of phenomenology

But much remains in phenomenology for those who want it. The Phenomenological movement, with its origins in Husserl at the beginning of this [20th] century and its rich history over the last hundred years, provides several resources for an authentic philosophical life (Sokolowski 2000, p.227).

In the last chapter of the *Prolegomena*, Edmund Husserl (Hua XVIII) proposed a pure logic, encompassing the various branches of mathematics, which would overcome the limitations of psychological philosophy, indicated in the *Prolegomena*, making general considerations about the fundamental properties of the empirical sciences in general and addressing the problems raised by the logic and mathematics of his time (Vargas 2019): “the *Prolegomena* is, after all, about pure logic, which is a formal eidetic discipline, without being in itself a deductively ordered eidetic science, but a theory of any deductively ordered eidetic science” (Hardy 1992, p.20).

As Edmund Husserl (Hua XVIII) explained in the fourth chapter of the *Prolegomena*, the relationship between real and ideal is fundamental to understanding the relationship between pure logic and sciences. Avoiding the contradictions of the psychologism that would lead to an attitude of relativism, the author established the meaning of logic as a pure and *a priori science* of the ideal senses. The presentation of the conception of pure logic in the last chapter of the *Prolegomena* is a consolidation of the debate related to logical psychologism, since Husserl (Hua XVIII) began the work discussing the status of logic as a science (Vargas 2015). He was concerned with knowing whether logic is a science dependent or independent of psychology. Another “traditionally controversial” issue concerns the relationship between logic and the empirical sciences, since he asks whether logic is an “*a priori* and demonstrative discipline or an empirical and inductive one” (Hua XVIII, pp.22–23). He confronted the hypotheses that concern the conception of logic and concluded that the psychological ideas are absurd, insofar as they lead to relativism. In the last chapter of the book, the philosopher explained his conception of pure logic.

When considering the problem of the *Prolegomena*, the idea of pure logic plays a central role in the development of the work’s antipsychological argument, which is based on the ideal meaning of logic (Hartimo 2012, p.122). Edmund Husserl contrasts empirical psychology and pure logic, where there is no place for contingent forms. Logic seeks universal validity and cannot be restricted to the ways in which a specific group uses sentences (Smith 2007). By delimiting the notion of logic as *Wissenschaftslehre*, one can see how it is possible that logic, focused on the “domain of truth,” can encompass the “domain of probability” without giving in to the psychologism criticized in the *Prolegomena* (Hua XVIII, §72). Logic, closely related to mathe-

matics, deals with the fundamental conditions for all sciences (Vargas 2019; 2022). From this perspective, we observe, in the *Prolegomena*, that Husserl (Hua XVIII) focuses his criticism on logical psychologism. Analyzing the evolution of Husserl's critique of psychologism, Porta (2014, p.4) presented a distinction that helps to clarify what can be understood by the expression "logical psychologism". Considering the ambiguity of Husserl's use of the term, "logical psychologism" can be understood in relation to the psychological understanding of "abstract objects" or it can refer to "psychologism in logic, excluding epistemology" (Porta 2014, p.4).

However, the fight against logical psychologism implies a fight against empiricist epistemology (Porta 2010, 2013; Santos 2010). To refute logical psychologism, Husserl needs to develop a "theory of knowledge" (*Erkenntnistheorie*) that shows the possibility of knowing ideal objects (Hua XVIII, p.7; Hua XIX/1, pp.1–38): "*Logical Investigations* therefore understand logical psychologism as a consequence of epistemological psychologism and, therefore, as being fully refutable only to the extent that the latter is refuted" (Porta 2013, p.132). For Porta (2013, p.132), *Logical Investigations* offers a "new epistemology", questioning the "idea of epistemology" to analyze the "science of the ideal":

The *Logical Investigations* offer a "new" epistemology in several senses. It focuses, on the one hand, on a problem neglected by previous epistemologies [...], namely, the possibility of a science of the ideal; on the other, it provides nothing less than a new idea of the essence of knowledge [...]. Furthermore, [...] the *Logical Investigations* expressly propose to correctly fix the very idea of epistemology. This will lead to phenomenology being conceived as a presupposition or, better still, as the mode of realization of the theory of knowledge (Porta 2013, p.132).

Marcus Sacrini highlighted a central position in Husserl's philosophy of science, which is precisely related to the division of labor between philosophers and scientists: "the sciences lack a foundation that can only be offered" (Sacrini 2009, p.577). In the *Prolegomena*, in the section prior to the presentation of the expansion of pure logic through probability theory (Hua XVIII, §71), Husserl specifically delimited the work of philosophers and mathematicians (Vargas 2019).

It is only at the very end of the *Prolegomena*, in section 72, that Husserl turns his attention to the empirical sciences as such. There, he explicitly limits the competence of pure logic as a theory of sciences, which are of a pure deductive character, sciences whose unity is a 'deductive unity'. Now, any science, insofar as it involves explanation, will present a deductive order [...]. Husserl subscribes to the deductive-nomological model of scientific explanation [...]. There is, therefore, some aspect in which the empirical sciences are under the classical idea of science and some aspect in which they are not (Hardy 1992, pp.20–21).

The philosophical work described in the last chapter of the *Prolegomena*²⁷ (Hua XVIII, §71) can be associated with the domains of the two disciplines mentioned in the first chapter of the same work (Hua XVIII, §5): metaphysics and *Wissenschaftslehre*. Edmund Husserl assumes that there are presuppositions of science, which are not clarified by scientific research itself, which belong to the investigations of metaphysics. If metaphysical presuppositions are often overlooked, they are nonetheless significant for the empirical sciences, that is, those that refer to “real effectiveness”:

Such assumptions are, for example, that there is an external world that extends in space and time, where space has a Euclidean and three-dimensional mathematical character, and time, that of a one-dimensional orthoid multiplicity; that all becoming is subject to the law of causality, etc. Quite inadequately, these assumptions, which belong entirely to the scope of Aristotle's first philosophy, are today considered to be theoretical-cognitive (Hua XVIII, p.27).

If the “metaphysical foundation” has its importance in the empirical sciences, Edmund Husserl understands the objects of the “purely mathematical sciences” as “independent of real being or non-being, as mere supports of purely ideal determinations” (Hua XVIII, p.27). In this sense, logic, understood as a discipline of *Wissenschaftslehre*, reaches all sciences more broadly. Being the “science of sciences”, logic analyzes what, essentially, makes a science a science. Husserl (Hua XVIII, §6) notes that all sciences, in the search for truths and probabilities, go beyond the limits of evident knowledge, using methodical procedures and auxiliary means (Vargas 2022).

Later, in the 1906/07 lectures on logic and theory of knowledge, Edmund Husserl (Hua XXIV) would develop more broadly the questions about the relations between formal logic and the critique of knowledge. In the chapter on the theory of knowledge as first philosophy, for example, Husserl (Hua XXIV, §31a) deals with the theme of the complementation of *Wissenschaftstheorie* by the theory of knowledge. The philosopher comments on the disciplines essentially related, stating that the critique of knowledge should also be included in this set of disciplines. However, Husserl (Hua XXIV, p.157) distinguishes the broad sense of logic, including the critique of knowledge, from the strict sense of formal logic, which was analyzed in detail by Laurent Joumier (2009). Presenting a broad philosophical project, Husserl also relates the following disciplines to logic as *Wissenschaftslehre*: formal ontology, real ontology, noetics, logical theory of norms, theory of knowledge as theory of reason and, aiming at technical and practical objectives related to the theory of science in general, the theory of the art of knowledge and science (Vargas 2015).

Therefore, to refute psychologism, it is necessary to answer an epistemological question (Bastos, Lobo & Vargas 2014): “are the fundamental principles of knowledge, or thought, in some sense, founded on the nature of the mind?” (Mohanty 1989,

p.3). The problem of psychologism in Husserl was not resolved only in *Prolegomena*, because he needed to establish a connection between the logical and psychological domains. The philosopher needed to maintain the ideality of logic, defended in the *Prolegomena*, offering an explanation about the cognition of the objectivity of logic that used a theory of evidence and truth that was not psychological. For example, Edmund Husserl (Hua XXV) criticized naturalism's emphasis on physical interpretation, arguing that it overlooked qualitative differences in reality. This critique was informed by Husserl's broader philosophical aims to assert that philosophy should not only serve science. He viewed the dominance of naturalism as reducing philosophical inquiry to a mere component of scientific methodology, failing to recognize the distinctness of logical and psychological processes.

José Henrique Santos (2010) links the rise of psychologism to a more extensive "naturalism" that sought to apply the experimental methods of the natural sciences to human nature. Edmund Husserl (Hua XXV) regarded naturalism as a fundamental threat to both authentic science and philosophy, consistently criticizing it throughout his work as seen in *Philosophy as a Rigorous Science*,²⁸ where he refuted naturalism and positivism. Husserl noted that naturalism, driven by empiricist thinkers, dominated the philosophical landscape in the 19th century, framing empirical science as the only legitimate path to truth.

As Husserl developed his ideas after *Logical Investigations*, he articulated his critiques of naturalism; the initial critique in *Prolegomena* addressed the absurdity of psychologism (Hua XVIII), but, over time, phenomenology emerged as a counterpoint to naturalism, suggesting that subjectivity must be understood beyond empirical terms. Overall, Husserl's work reflects a rigorous philosophical endeavor that sought to establish the autonomy of philosophy from the empirically driven natural sciences, focusing on the necessity of a transcendental approach to understanding knowledge and reality. These challenges were taken up again in *Formal and Transcendental Logic* (Hua XVII). In this work, more than twenty years after the original publication of the *Prolegomena*, the author radically deepened his analysis of psychologism, going beyond considerations of logical psychologism and going beyond a logical refutation:

It is not wonder that in his writings after the *Prolegomena*, Husserl searches for a deeper way to understand and overcome psychologism. Such overcoming would be by refuting it, not only by showing its incoherent logical consequences [...] but also by showing the historical origin of such a naturalistic interpretation of mental life (Mohanty 2003, p.128).

Edmund Husserl (Hua XVII, §56, §57a) uses the expression "logical psychologism" in *Formal and Transcendental Logic* in the context of understanding the analysis of subjectivity in the philosophy of logic. The author intended to delve deeper into

the problem of psychologism with greater precision. The complexity of the analysis of psychologism led Husserl to deepen its distinctions. The expression “logical psychologism,” for example, is not used in the *Prolegomena*, except in the posthumous introduction by the editors of the volume of the *Husserlian collection* (Hua XVIII, p.XLIX) and in Husserl’s preface to the second edition of the work, which was signed with the date “October 1913” (Hua XVIII, p.12). However, Husserl uses the expression “logical psychologism” in *Formal and Transcendental Logic* (Hua XVII, §67) to explain the contrast between the refutation of psychologism presented in the *Prolegomena* and the (epistemological) investigations of the second volume, deepening aspects related to the subjectivity of knowledge, such as the analysis of intentional structures of meaning (Hua XIX/1). Therefore, Husserl shows a special link between the theme of “logical psychologism” and the *Prolegomena*, which presented the critique of psychologism with the intention of presenting logic as an “autonomous science” (“*eigenständigen Wissenschaft*”) in its “purity and ideal peculiarity” (Hua XVII, p.154).

In *Formal and Transcendental Logic*, Edmund Husserl (Hua XVII) presupposes that subjectivity goes beyond the psychological and the neurophysiological, which offer certain interpretations of the subjectivity of consciousness, but do not exhaust the issue: “for this purpose, he [Husserl] needs a satisfactory theory about the relation between the transcendental and the empirical” (Mohanty 2003, p.127), which seems to continue, in some way, the question of the distinction between the logical, ideal, and the empirical. This way, Husserl’s work opened new perspectives in the philosophy of science, particularly through his idea that scientific knowledge must be grounded in a rigorous understanding of ideal meanings and structures. For Husserl, the task of investigating the ultimate meaning of science falls to philosophy and, more specifically, to “phenomenology, as the fundamental philosophical discipline” (Hardy 2013, p.42), which aims to preserve the autonomy of logical principles by situating them within the realm of ideal meanings, accessible through a method of eidetic or essential intuition. The Phenomenological clarification of the foundations of positive sciences aims to increase theoretical rigor in the radical clarity of scientific assumptions²⁹.

4. Final considerations

The relationship between subjectivity and objectivity was something that, in a certain sense, escaped the antipsychological argument and could only be resolved with phenomenology. Edmund Husserl’s critique of psychologism extends beyond the confines of logic and psychology to offer a broader philosophy of science and knowledge. His Phenomenological approach continues to influence debates on the nature of knowledge, objectivity, and the foundations of logic (Vargas 2015; 2019). By freeing logic

from psychological reductionism, Husserl paved the way for a more nuanced understanding of scientific objectivity. His phenomenology sought to describe the structures of consciousness that make knowledge possible, without conflating those structures with empirical psychology. Therefore, Husserlian philosophy cannot simply accept and generalize the results of science, but must seek the founding meaning that logically precedes science, interpreting it phenomenologically.

The need for a philosophical deepening of the sciences is consistent with the distinction reiterated by Husserl in several works (Hua XVIII, Hua XXIV, Hua XXIX), between the intellectual attitude proper to science and the philosophical attitude. In the lectures of 1906/07, for example, Husserl (Hua XXIV, p.98) related the lack of critical intuition in the foundations and methodologies of the exact sciences with the gaps in their knowledge and with the possibilities of different “interpretations” for the same theory. For Husserl, science, and knowledge in general, require a grounding in the ideal essences of phenomena, a project that seeks to bridge the gap between subjective experience and objective truth. This framework remains relevant for contemporary discussions in epistemology, the philosophy of mind, and cognitive science, where the challenge of balancing subjective and objective perspectives continues to be a central concern.

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Notes

¹The original title of the work *Prolegomena to Pure Logic* is *Logische Untersuchungen: Erster Band – Prolegomena zur reinen Logik*, which will be simply referred to as *Prolegomena*. The citation will follow the standard of the critical collection of Edmund Husserl's works, the *Husserliana* (“Hua”), indicating the volume of the collection and the section (§), when applicable. The volumes of the *Materialien* series of the *Husserliana* collection will be indicated with the abbreviation “Hua Mat”.

²Martin Kusch (1991; 2005) cites several conceptions of psychologism, some of which had already been catalogued by Willy Moog in a work published in 1919: *Logic, psychology and psychologism (Logik, Psychologie und Psychologismus)*.

³If Mill was ambiguous in relation to psychologism, Husserl also maintained some ambiguity in relation to the philosophy of the English empiricist. Herbert Spiegelberg (1965, p.92) had already observed that, if the English philosopher was the “favorite target” of Husserlian criticism, he was also the object of “high regard”, being recommended to his students as an introductory study to phenomenology (Santos 2010, p.40).

⁴Luis Alberto Canela Morales observes an important epistemological difference between the Husserlian antipsychological arguments in relation to Lotze and Bolzano: “Husserl does not defend the separation of the logic of psychology on the basis of the supposed normative

character of the first, but on the basis of it which must be considered as science” (Canela Morales 2023, p.205).

⁵Marvin Farber (2006) recalls that Husserl was influenced by the neo-Kantian school, especially Natorp, but sought to advance philosophically beyond the point reached by previous antipsychologists.

⁶Jairo da Silva (2007, pp.123–142) presents a reflection on “Frege and logicism”, associating Frege with the project of reducing the concepts of arithmetic to logical equivalents (Da Silva 2007, p.109). Ferrater Mora commented on the relationship between logic and mathematics, introducing a “profound revolution” by founding mathematics on logic (Mora 2001, p.1780).

⁷*Begriffsschrift: eine der arithmetischen nachgebildete Formelsprache des reinen Denkens.*

⁸*Grundgesetze der Arithmetik: begriffsschriftlich abgeleitet.*

⁹Herbert Spiegelberg recalls that the term “psychologism” had already been used by Carl Stumpf in his work *Psychology and Theory of Knowledge* (*Psychologie und Erkenntnistheorie*), published in 1892 (Spiegelberg 1965, pp.93–94). However, Stumpf (1892, p.468) used the term “psychologism” in a broader sense in his discussion of the theory of knowledge. In *Psychology and Theory of Knowledge*, Stumpf (1892, p.508) described psychologism as the reduction of all philosophical research in general to psychology. The author also expressed his hope that psychologism would disappear from the agenda of philosophical debates.

¹⁰*Die Grundlagen der Arithmetik: Eine logisch mathematische Untersuchung über den Begriff der Zahl.*

¹¹It should be noted that logicism, in a certain sense, predates Frege and Husserl. The author of the *Prolegomena* associated his logicism with Lotze (Hua XVIII, p.73). Logicist reflection, uniting aspects of logic and mathematics, dates back to the work *Logic* (*Logik*) by Hermann Lotze (1843). According to Lotze, mathematics is a branch of logic that developed separately, but also remained within the *domain* of exact logical laws, bringing together the spheres of logic and pure mathematics.

¹²In this way, communication between thinkers from both lines of thought was made difficult in some aspects.

¹³Note that in the fourth chapter of the *Prolegomena*, Husserl (Hua XVIII) used the term induction in the sense of something that starts from singular facts, which may or may not happen, depending on the circumstances. He did not present a detailed analysis of induction, but used this notion to differentiate the necessary character of pure logical laws and the contingency of empirical laws (Canela Morales pp.206–208; Vargas, 2022).

¹⁴*Der Streit der Psychologen und Formalisten in der modernen Logik.*

¹⁵Probability theory, as an ideal domain, has a special role in relation to the empirical sciences and could help in explaining the relationship between ideal and real. However, probability theory has taken a back seat in Husserl’s project of pure logic and in logical investigations as a whole (Aach 1990; Vargas 2022), as Husserl explained in the last section of the *Prolegomena*. Therefore, as Edmund Husserl (Hua XXII) observed in his critique of Melchior Palágyi, his antipsychological argument was not so incomplete, but already presented, spread throughout the hundreds of pages of *Logical Investigations*, many answers to the psychological mistakes and to the questions of his readers.

¹⁶For Evert Beth, for example, if there is psychologism in the *Philosophy of Arithmetic*, there is also psychologism in *Logical Investigations*, since between one work and the other there was

only a terminological change: “the difference between the PA [*Philosophy of Arithmetic*] and LI [*Logical Investigations*] is, therefore, terminological. The term ‘psychologism’ is relevant to the term ‘philosophy’ that roughly describes the same genre of introspective research” (Beth & Piaget 1961, p.47). However, such a statement makes an undue generalization.

¹⁷One example is the Husserlian distinction between symbolic and authentic modes of presentation (Vargas 2015).

¹⁸One can revisit some of the German intellectual context at the turn of the 19th to the 20th century through the research on the sociology of knowledge carried out by Martin Kusch (1991). The author seeks to carry out a sociological deconstruction of psychologism in Germany at the turn of the 19th to the 20th century. Kusch starts from the “fact” that psychologism was refuted due to the efforts of Frege and Husserl in logic and epistemology. This “fact” became widely accepted, having been incorporated into reference books on 20th century philosophy. One can question the scope of Husserl and Frege’s criticisms of psychologism (Hanna 2006), but they cannot be left aside in works on this area of study and can be used as premises for new arguments.

¹⁹Martin Kusch (1991) has also noted that it has also been widely questioned whether the accusations made in the *Prolegomena* were true at all, since several philosophers have denied that they were psychologists in the terms indicated by Edmund Husserl, even those who have only been given implicit references, such as Franz Brentano, Wilhelm Wundt, Johann Erdmann, Christoph von Sigwart, and Theodor Lipps. Kusch (1991) also notes that almost all reactions to the *Prolegomena* have argued that Husserl, a critic of psychologism, also showed himself to be a psychologist at some point in his work.

²⁰Mohanty (1999, pp.21–24) also listed some examples of responses to Husserlian antipsychologism, including Schuppe (1910), who had written, in 1894, the work *Outline of a Theory of Knowledge and Logic (Grundriss der Erkenntnistheorie und Logik)*. In this book, Schuppe explained the need to separate, in logic, the pure elements of thought from acts of thought and linguistic characteristics.

²¹Jairo da Silva (2007, p.139), for example, classified Husserl’s philosophy of mathematics as “an ontological variant of logicism”, considering that Husserl “believed that logic was not only responsible for investigating a priori laws in the domain of statements, but also analogous laws in the more general domain of objects considered only as such, independent of other determinations. For Husserl, logic is the most general theory of science; now, science is a body of true assertions about objects” (Da Silva 2007, p.139).

²²Mohanty (1999) presented a comparison of the interpretations that Husserl’s “psychologism” has received from some contemporary philosophers. He briefly presents two philosophers (Dallas Willard and Barry Smith) who resolve the “paradox of logical psychologism” with the theory of meaning based on cognitive acts, a philosopher (Michael Dummett) who identifies psychologism in Husserl’s theory of meaning, and a philosopher (Robert Hanna) who identifies a “weak psychologism” in Husserl.

²³In the original: “*El punto culminante de la crítica es, en efecto, aquel en que convergen la apelación directa a la evidencia y exactitud de las leyes lógicas... como leyes de objetos ideales, y la confutación del escepticismo como un contrasentido [...] supuesta la necesidad del ser ideal: aquel punto, en conclusión, que plantea el problema de si el escéptico [...] ‘puede dejar’ de ‘poner’ el ser ideal o ‘tiene’ que ‘reconocerlo’. El ser ideal no es apodíctico, cosa demostrada, sino problemático, cuestión filosófica*” (free translation by the author).

²⁴Hanna (2006; 2008) notes that Husserl presented a *reductio ad absurdum* argument against psychologists: “Husserl’s three basic arguments against LP [Logical Psychologism] all have the same general form, and that they all directly invoke non-natural or ideal facts about the specific character of pure logic... But it can be objected that Husserl only ever asserts that pure logic exists and also has the several non-natural or ideal specific characters he attributes to it, and that he never actually justifies this assertion. In this way, on the face of it, Husserl seems to have merely begged the question against LP. The question-begging objection was first made in 1901 by Paul Natorp... It is equally clear that Husserl would reply to this charge by saying that he has not begged the question against LP. Instead, and on the contrary, what he has done is to show... how the existence and specific character of pure logic is covertly presupposed and used, even by the defenders of LP” (Hanna 2008, pp.37–38).

²⁵*Formale und transzendente Logik. Versuch einer Kritik der logischen Vernunft.*

²⁶This problem was analyzed by Johanna M. Tito (1990) in her study on Husserlian logic. In *Formal and Transcendental Logic*, the need to consider subjectivity was also emphasized when deepening the investigation on the constitution of objectivity (Porta 2010; 2013). Rosado Haddock (2000), in turn, considers that Husserl was effective in his arguments against psychologism.

²⁷Mark van Atten (2007, p.55) analyzes section 71 of the *Prolegomena* as a “revisionism” in relation to the *a priori sciences* in general, which is discussed especially in relation to the philosophy of mathematics. He understands that Husserlian revisionism, in the *Prolegomena*, is “weak”, insofar as it refers more to the epistemological methodology of science than to the mathematical contents and objects themselves. Therefore, the notion that philosophy offers a “foundation” for mathematics is “a view that Husserl expressed throughout his development and reformulations of phenomenology in later years” (Van Atten 2007, p.55). He cites the Husserlian works, such as *Ideen III* (Hua V), Husserl’s article (Hua IX, pp.237–301) for the *Encyclopedia Britannica* (*Encyclopaedia Britannica*) and *Formal and Transcendental Logic* (Hua XVII) to analyze the evolution of mathematical revisionism in Husserlian philosophy.

²⁸*Philosophie als strenge Wissenschaft.*

²⁹In the lectures of 1906/07, for example, Husserl (Hua XXIV) shows the need for phenomenology in the clarification of empirical knowledge. Some of the main tasks that Husserl (Hua XXIV, pp.47–48) establishes “for logic and the theory of knowledge” (“*der Logik und der Erkenntniskritik*”) are related to the explanation of problems that, in the *Prolegomena*, had been related to the theory of probabilities. One can think of the question of the formation of hypotheses, concepts and other generalizations from scientific experiences and “questions of fact”. Another task, which is perhaps the greatest question of the theory of knowledge, according to the lessons of 1906/07 (Hua XXIV, p.48), is precisely to understand the ultimate reasons why no “natural science” (“*Naturwissenschaft*”) can only establish natural laws in terms of probabilities, without ever obtaining anything absolutely certain (Vargas 2022). In the lectures cited, Husserl points out the need for investigations into the legitimacy of induction, analogy, perception and memory. Note that these concepts have some relation to probability theory and empirical sciences, as highlighted in the explanations of the lessons given by Husserl between 1902 and 1903 (Hua Mat II, Hua Mat III).