INTEGRATING INFERENTIALISM AND REPRESENTATIONALISM: KANT'S SYNTHESIS THESIS, NORMATIVE CEILINGS, AND PHENOMENOLOGICAL DATA

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Abstract: During Kant's time, the fusion of mathematics and empirical research – pioneered by figures like Newton – was reshaping how conclusions about nature were drawn. Kant had to grapple with the question of how such validation depends on the logical frameworks and rationality standards used to structure scientific demonstrations. With the fading reliance on metaphysical principles to establish such standards, this article positions Kant's theory of synthesis as a pivotal response to these philosophical challenges, foreshadowing theses on how representational systems model and structure phenomena. A substantial part of Kant's strategy involved reconciling the inferential and representational dimensions of knowledge. The article will show how Kant's transcendental logic, Fodor's *Language of Thought*, and Husserl's formal ontologies collectively address the specification of non-extensional content by bridging conceptual mediators, representational structures, and grounded genus-species relationships. We then argue that without linking the formal specification of *intensional* cognitive processes to a normative theory of higher-order contents, and a theory of science and epistemology, the program remains incomplete. In chapter three, we delve into the debate with naturalist reductions of intentionality (Dennett) and with phenomenological and Hegelian perspectives, emphasizing normative, reflective, and intersubjective frameworks that shape cognition and its alignment with scientific paradigms and cultural norms. We conclude that Kant's thesis of *a priori* syntheses anchors problematic representations within possible experience, offering a dynamic framework for scientific self-consciousness and judgment certainty, bringing forth *phenomenological data* conditioned by a normative ceiling.
Keywords: Synthesis, phenomenological data, normative ceilings, inferentialism, representationalism.

Resumo: No período em que Kant viveu, a integração entre matemática e pesquisa empírica – promovida por figuras como Newton – estava transformando a forma como se chegava a conclusões sobre a natureza. Kant enfrentou o desafio de compreender como a validação científica dependia das estruturas lógicas e dos padrões de racionalidade que sustentavam demonstrações científicas. Com o declínio da autoridade dos princípios metafísicos na definição desses padrões, este artigo apresenta a teoria da síntese de Kant como uma resposta fundamental a esses desafios filosóficos, antecipando discussões sobre como os sistemas representacionais estruturam e modelam fenômenos. Uma parte central da abordagem de Kant foi harmonizar os aspectos inferenciais e representacionais do conhecimento. O texto explora como a lógica transcendental kantiana, a Linguagem do Pensamento de Fodor e as ontologias formais de Husserl contribuem para a especificação de conteúdos não-extensionais, articulando mediadores conceituais, estruturas representacionais e relações fundadas entre gênero e espécie. Argumentamos que, sem integrar a especificação formal de processos

cognitivos intensionais a uma teoria normativa que contemple conteúdos de ordem superior, e também a uma teoria da ciência e epistemologia, essa abordagem permanece incompleta. No terceiro capítulo, examinamos debates sobre reduções naturalistas da intencionalidade (como as de Dennett) e abordagens fenomenológicas e hegelianas, destacando a importância de perspectivas normativas, reflexivas e intersubjetivas na formação da cognição e sua consonância com paradigmas científicos e normas culturais. Concluímos que a tese kantiana das sínteses *a priori* fornece um alicerce para integrar representações problemáticas à experiência possível, propondo uma estrutura dinâmica para a autoconsciência científica e a certeza dos julgamentos, evidenciando dados fenomenológicos guiados por limites normativos.

Palavras-chave: Síntese, dados fenomenológicos, limites normativos, inferencialismo, representacionalismo.

Introduction

The hypothesis driving this article is that Kant's framework bridges the gap between raw cognitive processes and structured phenomenological content by introducing a dynamic synthesis that aligns sensory input with the universal categories of thought. This synthesis, far from being a merely formal or abstract operation, produces data that are phenomenological in character: immediate, introspectively accessible, and normatively grounded within the conditions of possible experience.

To achieve this aim, we begin by introducing Kant's theory of synthesis and its integration of inferentialism with representationalism. The article argues that Kant's theory of synthesis unites inferential and representational components, proposing that inferential content can be represented in intuition as a structure or ideal content. This representation, in turn, reflects a mental operational competence that aligns with the theoretical awareness of higher-order unifying concepts.

This argument will branch into other theses about the nature of cognition and its conditioning by normative ceilings, which delineate the upper limits of representability and intelligibility in relation to the cultural, scientific, and rational structures of each era. Kant's perspective on synthetic representations creates a framework where intentionality, consciousness, and logical structures are viewed not merely as psychological processes but as phenomenologically structured data. This phenomenological quality indicates that it is not merely a passive imprint or a logical construct but rather a

meaningful, organized content that aligns with the underlying structures of human cognition.

A key point of contention in the article, which requires clarification from the outset, is precisely what we mean by *phenomenological data* and *normative ceilings*. This isn't an easy answer, as it hinges on the full development of the article's theses. However, a preliminary explanation will serve as a helpful foundation. Phenomenological data is, bluntly, the unmediated content of consciousness. This data, however, faces a paradoxical fate, as it possesses the characteristics of something processed or produced within subjective states of consciousness, and thus does not exist as a thing in itself. Kant's theory of *a priori* syntheses seeks to resolve this apparent contradiction by presenting a dynamic mechanism that generates structured knowledge through the harmonization of sensory input with universal categories. The insight into the operation of categories is not derived from speculative theorizing or external observation but from self-evident reflection on how knowledge validation occurs. In reflecting on how we synthesize sensory data into coherent experience, we directly encounter the functioning of these categories as a fundamental aspect of our reasoning process. This immediacy qualifies it as a *datum*.

The idea of a *normative ceiling* then comes into play to explain how this data conforms to a reflective self-consciousness that manifests intersubjectively in the shared frameworks of cultural, scientific, and rational norms. These ceilings represent the upper boundaries of intelligibility, structuring the ways in which phenomenological data is shaped and aligned with the standards of thought and meaning prevailing in a given historical or intellectual context. In our article, this ceiling will also be referred to as a *phenomenological ceiling* to emphasize its distinction from other types of constraints within the space of cognition, such as purely biological, computational, or sociological limitations[1]. Unlike these, the phenomenological ceiling specifically pertains to the structural conditions that govern how consciousness synthesizes and organizes problematic (inferential) data into coherent representations, ensuring its alignment with standards of intelligibility and meaning.

The main argument of the first section is that Kant's theory of synthesis introduces an innovative approach to the longstanding theory of

[1] Kant had his own technical theory about the "anti-logical" effects of surpassing these limits. He refers to dialectical inferences as conflicts that arise when reason attempts to exceed its own limits, leading to contradictions that cannot be resolved because they transcend the cognitive powers of humans, which are fundamentally rooted in intuition (*KrV*, A426/B454).

representation, one that anticipates structuralist theories about the relationship between a model and what it represents. Kant's synthesis does more than merely combine sensory data; it actively structures and unifies multiple representations into a cohesive framework, transforming raw sensory input into coherent, meaningful content. This synthesis is not a passive reflection but an active construction by the understanding, which organizes sensory data according to *a priori* principles. By doing so, Kant lays a foundational theory of cognitive structure that prefigures structuralist ideas about how models relate to the phenomena they describe. Chapter 1 sets the stage for a comparison between Carnap's structuralist model of inference specification, as outlined in his pre-semantic (1937) and semantic phase (1947), and Kant's theory of synthesis. Carnap's framework, with its emphasis on the coexistence of multiple logical systems, offers valuable insights into the structural organization of inferential systems. However, it also reveals limitations when contrasted with Kant's approach, particularly in its lack of connection to possible experience.

In the second section we argue that Kant's theory integrates inferential and representational dimensions within the synthesis, suggesting that inferential content can be represented in intuition. The synthesis process enables the unification of conceptual and intuitive material, ensuring that information processed through a rule-based framework can be represented within intuition. This unity of informational material, framed as a theory of judgment, marks a departure from simple, lower-order extensional models. This theory illustrates how the mind converts raw sensory impressions, initially just psychological data, into structured phenomenological data by imposing certain organizing principles, that align these impressions with universal categories (*KrV* A79/B104-105)[2]. This suggests that while applying a theoretical concept to a particular entity may seem meaningless, it gains significance when seen as part of a broader structure governed by a unifying concept. In Kant's theory of judgment, this application of concepts to intuition is an *a priori* process, where the mind organizes and interprets sensory data through categories before any empirical representation.

In Section 2.2, we delve into a debate that bridges Kant's theory with Fodor's *Language of Thought* hypothesis and Husserl's conception of formal ontology. Building on Kant's hypothesis (*KrV* A 504/B 532), the analysis demonstrates that the intensional content of p and not-not-p can be represented by separate "machines," each encoding distinct inferential

[2] *Critique of Pure Reason*: *Kant, I. (1781/1787). Kritik der reinen Vernunft. In Akademie-Ausgabe, Vol. 3, pp. 1-552.* Cited by A/B pagination.

structures. One machine focuses on the direct implications of p, such as a body smelling good, while the other encodes the negational structure of not-not-p and the implicit assumptions it avoids, such as rejecting contradiction without explicitly affirming smell. This representational framework intersects with Fodor's *Language of Thought* hypothesis by proposing a computational approach to intensional content, where each "machine" corresponds to a mental representation with specific inferential roles. Just as Fodor emphasizes that mental representations are structured in a way that allows for logical operations and inferences, this approach formalizes the structure of p and not-not-p as cognitive models that capture their distinct semantic and logical patterns. Similarly, the framework connects with Husserl's formal ontology by addressing the structural and relational aspects of meaning, where entities and their properties are situated within the broader genus-species framework.

This groundwork prepares the article for its central argument: Kant articulates a process through which psychological material is converted into phenomenological data – raw, ideal, and immanent, rather than merely speculative. Ultimately, this process manifests as the upper limit of reason's reach, reflected in the type of inferential competence compatible with the formal structure of specification found in the latest scientific paradigms. In section three, after delineating this argument (3.1), the article addresses how phenomenological data, structured by rational standards, interacts with normative pressures and scientific paradigms to shape cognition. It highlights the challenge of conceptualizing intelligence in alignment with these standards and emphasizes the necessity of integrating scientific knowledge into cognitive frameworks to ensure meaningful and accurate inferential capabilities. The discussion critiques theories that prioritize inferentialist frameworks, such as those of McDowell, Sellars, and Brandom, for neglecting the transformation of problematic content into structured phenomenological data within representational limits. It contrasts these inferentialist approaches with naturalist perspectives like Dennett's, which attribute intentionality to functional roles and evolutionary processes, offering a non-mystical and observable explanation for cognition. Finally, the argument concludes that normative ceilings are neither dogmatically imposed nor naturalistically reduced but emerge from the self-conscious reproduction of rational standards. We prioritize the phenomenological approach as the primary framework for analyzing the alignment between normative pressures and the highest rational standards shaped by scientific self-reflection.

The appendix will explore the nature of introspective material accessed through reflection, which is purportedly responsible for guiding the

formation of data on the limits of cognition. The objective is to assess whether reflective access to phenomenological data requires a skeptical trigger, such as the *epoché*, and to analyze the conditions under which these introspective data becomes both accessible and meaningful. This section offers a reinterpretation of phenomenological inquiry, emphasizing Kant's transcendental framework as an analogous reaction against non-critical views of the reality of representation. It contends that reflective access to phenomenological data does not necessitate suspending judgment about the external world but can be achieved through various skeptical approaches, such as Kant's engagement with Hume's skepticism and reflective representations of the consequences of those skeptical methods.

1. The main Problem

Kant's challenge in the *Critique of Pure Reason* (*KrV*) is to explain the possibility of synthetic *a priori* judgments. Philosophers widely recognize the challenge as one of the best ways for philosophy to question its own legitimacy, limits, and scope. In this broad sense, we can formulate this problem as a question of whether we can accept metaphysics as a science and, consequently, whether we can justify the most radical project that pure reason is capable of when it considers itself and its sovereignty as the final arbiter of human knowledge.

If interpreted more narrowly, though, that humans can make judgments that are both synthetic and *a priori* is equivalent to the thesis that all of our knowledge and science is neither vacuous or devoid of apodictic proof. This is a thesis that rests on another, which is Kantian: the thesis that 1. our knowledge is empty or lacking in apodictic proofs if it is based only on analytical or *a posteriori* synthetic judgments, and 2. Analytical, synthetic *a posteriori*, and synthetic *a priori* judgments are our only methods of proof. With this, Kant declares his entry into the philosophical global and historical community as one of the few authors to explore potential solutions to the central issue regarding the proof techniques used as a tactic for high-theoretical science validation, like mathematics as well as theoretical physics.

Kant's response has certain historical quirks. First, the very notion of "scientific validation" that a proof method attempts to explain depends on the available data about scientific practice. During Kant's time, science was changing because of new methods that the early proponents of classical physics developed by fusing mathematics and empirical research in order to draw conclusions from nature. Although this may seem like a trivial question, it

is known, today with increasing clarity, that selecting what counts as "datum" of a theory about science and what we will select as "science" is not a trivial task. The clarity with which we select what qualifies as "datum" in science today is contingent upon the logic framework we adopt. During Kant's time, people had a uniform view of logic. The author himself considered Aristotelian logic as the only and final chapter of this discipline. But Kant was the first to also see how there are ways of considering the content of cognition in a transcendental logic, which evaluates how this content gives the matter to represent high-order concepts in intuition, thereby generating syntheses that align with scientific representations, such as those found in Newtonian science.

Second, the question of what, from an epistemological standpoint, constitutes science – that is, what kind of human knowledge qualifies as science – often hinges on the skepticism that science resists. Kant's time was marked by a continuous program of skepticism, and he addressed this challenge within the context of the ongoing debate, similar to how answers to skeptical problems were given during different stages of contestation of pure reason in the history of Western metaphysics. David Hume, in the *Treatise of Human Nature* (1978) was the author who, during Kant's time, posed the most significant challenges to the primacy of pure reason.

We postulate that Kant's thesis of *a priori* syntheses was formulated as a response to this skepticism, while respecting the boundaries it imposed on pure reason. Kant's theory builds upon the reflective aspects of this skepticism to establish the conditions for access to a new phenomenological dimension – a dimension of self-understanding regarding the categories that underpin our *a priori* knowledge. He establishes a new theory about our cognitive machinery, explaining how we can use the unity of our representations to support the certainty of high-level theoretical judgments. This approach allowed Kant to reinterpret the innovative scientific methods developed by pioneers like Newton and Galileo, not as an abstract framework detached from human life, but as a type of thinking deeply integrated into the very fabric of human experience – generated by our capacity for hypothetical or problem-solving thought that can be meaningfully represented through human faculty of intuition – in other words, by our capacity to present or to model thought. In essence, as we aim to present it, this involves transforming the inferential material generated by these theoretical paradigms into meaningful representational content that provides a framework for making sense of complex scientific laws. Rather than being mere speculative projections about the future and the unknown, these representations articulate how scientific reasoning organizes and synthesizes complex phenomena into coherent,

synthetic *a priori* judgments, offering a structured way to understand and apply intricate laws of nature.

Section 1: Kant's Theory of Synthesis and the Foundations of Cognition

1.1. **Synthesis and the Foundations of Structure:**

Kant builds a theory of cognitive associations or linkages, creating a structure in which multiple representations are synthesized into a cohesive unity. In his words:

> The combination (*conjunctio*) of a manifold in general can never come to us through the senses, and therefore cannot be contained in the pure form of sensible intuition. For it is an act of the spontaneity of the power of representation, and, since one must call this power the understanding, to distinguish it from sensibility, all combination – whether we are conscious of it or not, whether it is a combination of the manifold of intuition or of several concepts – is an act of the understanding. This act we shall entitle by the general name synthesis, to indicate that we cannot represent to ourselves anything as combined in the object without having previously combined it ourselves. (K*rV*, A77/B103)

Kant's synthesis theory provides the foundational material for these judgments by establishing an *a priori* framework that enables the mind to structure raw sensory impressions:

> The pure concept of the understanding does not relate to any intuition in particular, but only to that empirical intuition in general, be it as it may, to which the manifold of a given intuition must be subjected in order to bring it under a concept. Only by means of this relation can it serve in a judgment." (*KrV* A248/B305)

Patricia Kitcher (1990) has extensively explored Immanuel Kant's theories on cognition and self-consciousness, particularly focusing on the concept of synthesis. In *Kant's Transcendental Psychology*, Kitcher discusses how the mind synthesizes sensory inputs to form coherent experiences, emphasizing the active role of the mind in organizing sensory data. The intersection of cognitive theory and structural theory can be seen in recent discussions that liken sensory interpretation to program synthesis. Richard

Evans, for instance, highlights this in his exploration of representational systems: "According to our interpretation, making sense of sensory input is a type of program synthesis, but it is unsupervised program synthesis, constrained in such a way as to achieve the synthetic unity of apperception" (EVANS, 2022, p. 43). This perspective aligns with the concept of the "Kantian brain," as described by Northoff (2018), who posits that the brain inherently organizes and synthesizes sensory information to create a stable, unified experience of the self and the external world. Such a framework reveals how the mind not only processes but structures experience in a way that echoes Kant's theories of synthesis and unity.

Kant's letter to Marcus Herz on February 21, 1772, captures a pivotal moment in the development of his critical philosophy and poses a question that resonates profoundly with later debates on the structures and meta-mathematical properties of models. He asks: "what is the ground of the reference of that in us which we call 'representation' ('*Vorstellung*') to the object?" (AA 10: 129-130). This problem lies at the heart of the *Critique of Pure Reason*, where Kant formulates his solution through the concepts of categories of understanding and a priori syntheses, which structure sensory input into coherent, meaningful experiences. Cognitive synthesis forms the foundation of all human knowledge, enabling the mind to relate and organize abstract structures, unify inductive parameters, and coordinate inputs and outputs. This innate capacity for relational thinking – essential for understanding structure itself – is illustrated by Dedekind's reflection that "...we are led to consider the ability of the mind to relate things to things, to let a thing correspond to a thing, or to represent a thing by a thing, an ability without which no thinking is possible" (DEDEKIND, in: SINACEUR, PANZA & SANDU, 2015, p. 24).

These reflections underscore that the mind's ability to relate and represent is central to our grasp of structure – the unifying pattern that models relations through their essential traits – and thus forms the basis of our ideal knowledge. This structural approach reveals how the mind organizes and makes sense of diverse elements by identifying their core relational patterns, thus supporting not only individual cognition but also the broader frameworks of scientific and philosophical understanding. This synthesis operates at various levels, culminating in a higher-order unity in which all subordinate representations are harmonized within a concept-intuition unity.

To deepen the philosophical understanding of these structural interdependencies, we can draw from Husserl's analysis of the "part-whole" relationship in the fifth logical investigation, where he discusses "dependent parts" or "non-self-sufficient parts," also called "moments.". Husserl describes

that certain parts are "dependent" – they do not have self-sufficient existence and can only exist within a larger structure. As he notes in *Crisis*, "A part that, taken by itself, cannot exist, is therefore called a 'dependent' or 'non-self-sufficient' part" (HUSSERL, 1970, p. 456). This notion underlines the idea that within a synthesized whole, not all components are fully independent; instead, some are intrinsically tied to the structure of the whole, only realizing their full meaning in relation to it. Kant's theory, then, can be seen as an early expression of the subsuming and unifying power of structural interdependencies, anticipating aspects of non-classical logical theories (BELL, 1986a; LAMBEK, & SCOTT, 1986b). that describe complex relationships within unified structures.

Kant's notion of synthesis as a bridge between concepts and intuitions anticipates Husserl's idea of fulfillment (2001). In the *Sixth Logical Investigation* (§8 and §11), Husserl outlines the fundamental dynamics of intentionality by framing it around the interplay between intention and fulfillment. He describes this process as inherently synthetic.

1.2. Synthesis, Schematism and Structural Integrity: Kant's Foundations for a Model-Theoretical Approach

The synthesis thesis culminates in Kant's doctrine of schematism, which examines the possible forms of congruence between concepts and intuitions. According to Kant, schematism is the process by which pure concepts of the understanding (categories) are made congruent with a priori intuitions, allowing concepts to be meaningfully applied to sensory experience. As Kant states,

> The schematism of our understanding, in respect of phenomena and their mere form, is an art hidden in the depths of the human soul, whose true operations we can divine from nature and lay unveiled before our eyes only with difficulty" (*KrV* A141/B180).

This mysterious "art" of schematism enables pure concepts to gain empirical applicability by aligning with the structures of time and space inherent in intuition.

Adding to this framework, we can suggest that Kant's reflection serves as a foundational seed for a model-theoretical approach, which can further clarify the conditions under which a representation is deemed adequate for theoretical application. This aligns with the study conducted by Carnap in

Aufbau (1928 [1967]), where he attempts to address the broader question of objectivity in science by ensuring that representations maintain structural integrity and coherence, a pursuit that ties into his objective of grounding scientific knowledge in a unified syntatic framework. In the words of FRIEDMAN:

> Carnap introduces the concept of the form or structure of a relation in §11. The structure of a relation is the class of all relations that are isomorphic to it, or, what comes to the same thing, the totality of its formal properties. (1987, p. 527)

Rudolph Carnap, in his pre-semantic period, states (CARNAP, 1937, p. 11) "the question, whether a certain proposition is an inference [*Folgerung*] of certain other propositions or not, is therefore completely analogous to the question on whether a certain position in chess can be played from another or not." Carnapian inferentialism must be understood against the background of his formal theory, in which logical consequence is thought of as the fundamental problem to be solved by a syntactic theory capable of determining whether a proposition follows from another in a necessary way. According to Carnap, the term "content" (also known as "Sinn," "Inhalt," or "Gehalt") can be defined strictly syntactically.

In Part IV, Carnap's goal is not only to construct concepts based on empirical data but to reveal a coherent framework that allows concepts to be defined by their structural relationships. In a Carnapian sense, this adequacy involves the principles of isomorphism and non-forkability. Isomorphism requires a one-to-one correspondence between a representation's structure and its object, ensuring precise and meaningful alignment, preserving relational integrity. Non-forkability refers to the stability and uniqueness of the representation's application across different interpretations, meaning that the representational model does not branch into multiple, inconsistent forms when applied to new instances. This ensures that the representation remains clear and consistent, upholding an interpretive framework that prevents ambiguity or contradictory outcomes.

Under the heavy impact of semantics and already in a new phase, the author of *Meaning and Necessity* (1947) also begins to consider from a referential, or representational, standpoint. From a representational perspective, the intensions and extensions are specified in the formal framework of possible worlds semantics. A statement's intension for CARNAP, "is the proposition expressed by it" (1947, p. 27). The proposition

indicates which worlds the sentence is true and which is false. It functions as a map between worlds to truth values: "A way is suggested by Leibniz' conception that a necessary truth must hold in all possible worlds. Since our state-descriptions represent the possible worlds, is this means that a sentence descriptions." (CARNAP, 1947, p. 10).

A modal proposition ('It is necessary that...' or 'it is possible that...'), for example, cannot be representably stated unless a relation is found, which is abstractly represented by a structure, and which precisely identifies the possibilities that are excluded from a *logical space* where this proposition can be raised. Carnap created detection methods that could discriminate between a machine "willing" to infer beings with kidneys rather than creatures with hearts, even when given a set of indistinguishable inputs. What distinguishes machines with different intensional programming would be their representation capacity, as they specify different worlds.

Despite the vague nature of the merely inferential commitment, the alternatives presented by such commitments are not random. Carnap's intensional theory provides an elegant framework for distinguishing between structures based on their relational specifications. In this context, machines serve as metaphors for cognitive abilities, highlighting their distinct intensional skills – the capacity to derive different outputs or interpretations from identical extensional inputs.

Carnap's work emphasizes how differences in syntactic structure correspond to varying inferential capabilities. For Carnap, machines with different internal specifications can represent distinct inferential processes. These machines metaphorically capture how cognitive systems operate under structured rules, producing interpretations not solely based on raw input (extensions) but also on the nuanced relational mappings that reflect intensional distinctions, which function as rules for inference, similar to a categorical framework programmed for certain distinctions but not others (our capacity to judge).

Drawing on the categorical distinctions emphasized by Carnap, this theory would allow for a hierarchical structure of inferential rules. Basic inferential mechanisms would operate at lower levels, processing raw extensional inputs, while higher-order mechanisms would refine and evaluate these outputs according to normative and intensional criteria. This transformation is guided by structured rules that reflect intensional distinctions, much like Kant's categories ensure the synthesis of intuition and concept. However,

> whereas Carnap retains the Kantian connections among objectivity, the notion of form or structure, and the *a priori* (for formal logic is itself certainly a priori for Carnap), he now has no need whatever for Kant's synthetic a priori. (FRIEDMAN, 1987, p. 529)

Carnap, however, moves toward a dimension where the study of intensions loses its connection to possible experience, which is a disadvantage when representing the properties of an inferential system compatible with a cognitive ceiling – that is, the specific conditions of a priori knowledge localized or tailored to human intuition within a particular standard of rationality. In Carnap's system, based on his *Principle of Tolerance* (1937), there is no inherent way to distinguish one framework from another in terms of validity or priority. The Principle of Tolerance allows for the coexistence of multiple logical systems or frameworks, each governed by its own rules and conventions, without prescribing a single "correct" system.

This open-ended approach means that inferential frameworks based on projections, scholastic entities, or mythological categorizations would theoretically hold the same status as empirically grounded systems, provided they are internally consistent. While this promotes flexibility and inclusivity in constructing formal systems, it also implies that Carnap's framework lacks the criteria to privilege systems grounded phenomenologically in the structures of human reasoning and aligned with the most advanced principles of human knowledge.

Section 2: Representation, Inference, and the Phenomenological Ceiling

2.1 Representation and Inference in Kant's Theory of Judgment: Representation in Higher-order Grounds

Kant's method combines inferentialism and representationalism. According to Kant's theory of *a priori* synthesis, the core concept is that the information within a theory of inference is constructed or processed by a rule, and then made capable of representation in intuition through synthesis. In Kant's theory, this connects to his theory of judgment: in the *Transcendental Deduction*, he examines the necessary normative properties (what Kant calls *quid juris*, or "by what right") that the theoretical content underlying the law of correlation must possess to allow for the application of concepts to intuitions (*KrV*, A84/B116–A130/B169).

We will now argue that the importance of this concept lies in representing the content of inferences, rejecting projective, associative, and syntactic theories, as well as simple, lower-order referential models like those proposed by extensionalists. In this sense, Kant's concept of synthesis – especially a priori synthesis – serves to fill a gap left by the concept of analysis.

Kant's distinction between synthetic and analytic judgments (*KrV* A6-A7/ B10-B11) reveals a key limitation of analytic judgments: they cannot account for possibilities that depend on more complex cognitive principles – higher-order conceptual principles – that enable the representation of unity between intuition and concepts. In a note directly addressing the topic within a section of *Transcendental Ideal*, the author states that:

> The concept is always possible if it does not contradict itself. That is the logical mark of possibility (…) Yet it can nonetheless be an empty concept, if the objective reality of the synthesis through which the concept is generated has not been established in particular; but as was shown above, this always rests on principles of possible experience and not on the principles of analysis (on the principle of contradiction). (*KrV* A 596/ B 624)

Relying solely on concepts and analytic knowledge would limit our capacity to rule out speculative scenarios that might be logically possible but do not align with the deeper, structural principles governing reality – such as the temporal structure of the universe.

In other words, Analytic judgments, which clarify meanings based on definitions and established concepts, do not engage with the actual conditions that make certain phenomena possible or impossible within the framework of our experience. They are confined to what is logically consistent within a concept, rather than what is grounded in the reality of time, causation, and other essential features of our experience.

We will show that Kant's theory of synthesis enables us to specify inferential content in a non-extensional way, by drawing on the introspectively accessible material that connects a conclusion with its premise within a theory of judgment. We argue that the thesis of the objective unity of apperception, or the theory concerning the synthetic foundation of certainty in judgment, is fundamentally about the components within human cognitive structure that allow it to form representational connections based on something beyond purely analytic grounds.

To clarify the nature of this synthetic unifying conceptual matter, consider our theoretical ability to recognize logical identities or contradictions.

Take, for example, the seemingly analytical statement, "green is a color." Conceptually, the idea of "green" includes the idea of "color" within it, making this relationship appear straightforwardly analytical. However, this conceptual inclusion alone does not specify the grounding conditions that would ensure that if something is verified as green, it is necessarily verified as a color as well. Although we can computationally "verify" this connection, it remains a mystery how the grounds for this computation are programmed into a machine or consciousness. These grounds are not analytical. The mere conceptual relation is insufficient to capture the conditions that would render this connection inherently valid in experience, highlighting the necessity of a synthetic foundation to establish such representational links.

This issue emerges when trying to identify clear rules that govern our inferences, as it can be difficult to see which specific rules have been internalized. For these rules to support normative reasoning, they need to explain why a conclusion is justified by its premises rather than arbitrarily related to them. Yet, from an extensional standpoint, this normative foundation is missing; we lack insight into the underlying principle that would explain, for example, *why* every green leaf must also be colored.

Kant distinguishes between *transcendental logic* and *general logic* by emphasizing their roles in supporting knowledge. General logic focuses on the formal structure of thought and applies universally to concepts without consideration of their connection to experience. Transcendental logic, on the other hand, examines the conditions that make knowledge possible (*KrV* A55/B79). According to Kant, a key element in creating the optimal relationship between conceptual mediators – like syllogisms – and their demonstrative base is the transcendental use of ideas:

> (…) we can expect that the form of syllogisms, if we apply to the synthetic unity of of intuitions under the authority of categories, will contain the origin of special concepts *a priori* that we may call pure concepts of reason or transcendental ideas (*KrV* A 322/B 378).

Kant thinks that can serve as "a canon for its extended and self-consistent use" (*KrV* A 329/B386). Unlike general logic, which treats "x is green" and "x is colored" as purely formal connections, transcendental logic would explore how the concept "green" necessarily includes "colored" in relation to possible experience, grounding it beyond basic computational verification.

The capacity to represent the synthetic unity of judgment, by capturing the demonstrative connection in a way that is neither merely extensional nor arbitrary, is a competence that enables us to make connections that go beyond strictly logical or analytic relations (those based solely on definitions or logical rules). Instead, it involves *a priori* synthetic connections – judgments that are foundational in teaching us the unity necessary to ground a judgment in an intuition. Representing such content should not be limited to external linguistic means; rather, it requires a cognitive apparatus robust enough to generate coherent syntheses independently.

2.2 Representing the Ceiling of Meaning: Machines that specify intensional content, Language of Thought, and the Formal Ontology of Synthetic Unity

Kant had an inferentialist theory about our logical patterns – not a truth-functional one – but he constructed it in a representational way, through his theory of categories. We have already compared his theory with Carnap's, which employed its own strategy for specifying inferential and intensional content without relying on *a priori* syntheses. We argued that Carnap's approach had its own disadvantages, particularly in disconnecting the problem of valid inference from the issue of selecting relevant categories within a framework of possible experience. We will now revisit this debate, focusing on a more contemporary author. We will see now how this theory is compatible with Jerry Fodor's theory about the language of thought. Finally, we will consider Husserl's contribution to this discussion, particularly his concept of formal or regional ontology, which provides a foundational structure for understanding how these inferential contents achieve objective grounding and meaning

We saw that our purely analytical understanding of the sentence "the green leaf is colored" is only a material or extensionally restricted depiction of a deeper understanding that can only be obtained synthetically as a *structure* that specifies the relationship between green and color. In sum, the (material) content of analytical judgments is not fully a representation of knowledge or the unity of representation that should be present when we *know* – not just in terms of extensionally mapping out the content, but also to defend it *theoretically* – whether a certain content is consistent and not self-contradictory. But how can we specify this content? It is easy to discuss in theory, but the true challenge lies in integrating our inferential knowledge with a solid representational foundation – a pursuit that forms the cornerstone of Kant's philosophical endeavor.

The challenge in Kant's conception – shared by other verificationalist-inferentialists like Dummett (1991a)[3] – is to clarify what it means for a speculative or problematic proposition to be connected to a basis of verification (in Kant's case, we can verify it in imagination or *a priori* intuition). The goal is to ensure that, even in the absence of a supersensible foundation or fact that would guarantee the normative or lawful character of this intensional/inferential content, it remains something that we can *specify* and understand systematically. In the following, we will argue this point through a series of progressive steps. We will, for pedagogical purposes, refer to these inferential or intensional contents as different 'machines,' in reference to Leibniz's concept of *lingua characteristica*. This metaphor draws on Leibniz's concept of machines as tools that handle complex operations reliably and automatically. Here, each "machine" is a structured, rule-based system capable of processing inferential content systematically, similar to how Leibniz (*Dissertatio de Arte Combinatoria,* 1666) envisioned his *calculus ratiocinator* managing the labor of computation.

By calling these contents "machines," the idea is to highlight that, even though there may be no "supersensible" truths governing them, we can still treat these contents as functional systems with consistent, testable behaviors. These "machines" can thus be seen as abstract models or causal structures that embody a predictable and stable pattern of inference. This metaphor helps illustrate that inferential content, while not governed by absolute metaphysical truths, can still be systematically evaluated and understood based on its reliable response to given inputs.

The challenge, then, lay in addressing how the content of an inferential, problematic, or non-extensionally determined proposition could be anchored to a basis of verification or an intuition capable of adequately representing it. This encapsulates the fundamental challenge of integrating representationalism and inferentialism. A basic and simple example of such a proposition is one where its truth does not imply the negation of its opposite and, therefore, one whose content *is not* identical to its double negation. The non-equivalence $P \neq \neg(\neg P)$ indicates that the proposition P behaves differently from its double negation, suggesting a deviation from the classical law of double negation elimination ($P \leftrightarrow \neg(\neg P)$).

[3] Dummett in *The Logical Basis of Metaphysics* adapted proof-theoretical ideas within his own framework to address the meaning and inferential roles of statements, especially in relation to verificationism and the philosophy of language: "The notion of harmony is introduced to describe the relationship that ought to exist between the introduction and elimination rules for a logical constant." (1991a, p. 215)

The question now becomes: if this proposition is not a pseudo-proposition (as some authors would claim), how can we represent its *specificity*? How can we represent the difference between *p* and *not-(not-p)*? To represent the intensional structure of 'p' as distinct from the not-(not-p), one could specify the unique inferential roles, or the different patterns of relational content, that each structure embodies. This involves capturing the ways each structure connects or implies other concepts, propositions, or judgments within a broader cognitive or logical framework. According to Kant's hypothesis, we can do it:

> If Someone said that every body either smells good or smells not good, then there is a third possibility, namely that it has no smell (aroma) at all, and thus both conflicting propositions can be false. (*KrV* A 504/ B 532)

Although Kant does not develop this thesis, he accepts here that part of the content of the first proposition does not exclude the content of its opposite:

> (…) the contingent condition of the concept of body (of smell) remained in the case of the conflicting judgment, and hence it was not rule out by it; hence the latter judgment was not the contradictory opposite of former. (*KrV* A 504/ B 532)

This aligns with what we seek: a specification of extra-extensional content. What Kant calls *third possibility* aligns with the idea of *extra-extensional content* because it shows that the meaning of a concept (e.g., "body") is not entirely reducible to its binary extensional classifications. Kant also explores the idea that the logical structure of a proposition extends beyond a simple extensional relation between subject and predicate in another chapter of his reflections on the ideas of pure reason. In a section on the *Ideal of Pure Reason*, he argues that negating both the subject and predicate of a concept eliminates any possibility of contradiction, as there is nothing left to contradict. This illustrates the intricate interplay between concepts, their negations, and the broader inferential structures they are part of:

> If I cancel the predicate in an identical judgment and keep the subject, then a contradiction arises; (…). But if I cancel the subject together with the predicate, then no contradiction arises; for there is no longer anything that could be contradicted. (*KrV* A 595/ B 623)

The absence of contradiction in such cases indicates that the opposition is not external or extensional but arises from the concept's intensional structure, where meaning is determined by the relationships between conceptual elements rather than their isolated truth values. One way to validate Kant's passage in light of recent developments in the philosophy of logic is to argue that it highlights the limitations of classical logic in capturing the full richness of conceptual content.

To return and provide an answer to our inquiry about how to represent the difference between p and ¬(¬p), one "machine" may encode p based on its inferential and relational structure, focusing on its direct implications (e.g., the body smelling good). Another "machine" may encode not-not-p by capturing its negational structure and the implicit assumptions it avoids, even without affirming 'p' (e.g., the absence of contradiction without direct affirmation of smell). The intensional content of 'p' can be represented by one *machine*, and the intensional content of the negation of 'not-p' by another. This provides an answer that does justice to both representationalism and inferentialism.

This approach highlights what we call *specifying difference*. Following Fodor's approach, we replace the old metaphor of "machines" with a "language of thought," which allows us to represent this *specifying difference* as an internal formula explicitly embedded within the structure of thought itself:

> (…) in particular, 'John believes it's raining' is true in virtue of a belief-making relation between John and a token of F (it's raining). It is, of course, the complement of a belief-ascriber that determines which internal formula is involved in its truth conditions; in effect 'it's raining' in 'John believes it's raining' functions as an index which picks out F (it's raining) and not, for example, F (elephants have wings) as the internal formula that John is related to iff 'John believes it's raining' is true (FODOR, 2002, p. 550-551)

To clarify the phenomenological conditions for specifying this content, we can now see that what was previously inferential, problematic, or speculative is reduced to an internal representation with an objective correlation to a specific type of structure, one that follows a genus-species relationship. This, in turn, conceptualizes the language of thought as a structured logical system, where essences are systematically arranged: "Each essence, whether materially filled or empty (thus, purely logical), has its place in a hierarchy of essences, in a hierarchy of generalities and specificities" (HUSSERL, 1983, p. 24-25). This gives the inferential and intensional content

an objective grounding, what Husserl refers to as a "formal ontology" (*Ideas*, §9-§10). This grounding in a formal ontology contrasts sharply with a framework of inferential rules based merely on presuppositions, habits, or psychological projections because it provides an objective, essential structure for knowledge. Husserl's concept of formal ontology refers to a framework of fundamental laws and categories that govern the structural relationships within a domain, such as the genus-species distinction. These relationships offer essential specifications intrinsic to the domain itself, rather than being mere projections of prior assumptions.

Husserl extends this notion to encompass not only purely formal inferential connections but also the synthetic formation of regional connections. This regional synthesis acknowledges that different regions of reality have distinct ontological characteristics, which shape the inferential pathways available within them (*Ideas*, §16). However, this subdivision is regarded as non-essential to our alignment with the concept of a language of thought. Instead, Husserl's focus remains on the overarching structural unity that underpins both formal and regional inferential processes, emphasizing their shared role in grounding thought in an objective ontological framework: "there indeed lies a justification for regarding <formal ontologies and material ontologies> as parallel in spite of all the essential differences which have been emphasized." (HUSSERL, 1983, p. 32).

3. **Phenomenological Ceilings and Cognitive Structures: Fusing Normativity and Introspection**

3.1. Our hypothesis: how cognitive processes are transformed into phenomenological data.

We saw that a formal ontology offers a framework for "specifying structures," or the precise conditions and categories necessary for understanding various types of content. So it enables the specification of mental competences in a way that aligns with an internal limit of cognition, similar to what Fodor describes as a "language of thought." This internal ceiling represents the cognitive boundaries within which these competences operate and organize thought. This technical specification of content can be viewed in two ways. It might be seen merely as a theory of cognition, disconnected from a theory of science and epistemology, and thus lacking a clear connection to Kant's broader thesis on validating the high-level contents of consciousness (such as those found in theoretical physics, mathematics, and

metaphysics). Alternatively, it can be understood as what we will term a theory of the *phenomenological ceiling*, which does justice to this critical aspect. The highlight of Kant's theory of synthesis is not merely its ability to specify intensional contents or extremely subtle languages that operate fine distinctions between extensionally identical contents.

In this way, Kant's theory and his transcendental logic are not simply a non-classical alternative among an ever-growing list of options, nor merely a meta-semantic theory about the specification of intensional or hyperintensional content[4]. Rather, it is a theory about the *ceiling of meaning* as this ceiling is phenomenologically presented through the cultural and scientific consciousness paradigms of a particular era. This ceiling of meaning, therefore, acts as the guiding structure that informs the intelligibility of scientific paradigms and cultural norms, determining how they resonate with and fulfill the cognitive needs of that time.

The theory of synthesis true significance lies in how it suggests that these specifications follow certain specific categorical pressures that align with the very problem-solving conditions humans face (in both their scientific and practical theories). Because of this alignment, they correspond to the resources necessary for integrating humans with their theoretical and practical reality, rendering the scientific paradigms and cultural norms of a given era intelligible and connected to the conditions of human experience. In other words, Kant's theory bridges the structures of human cognition with the frameworks of science and culture, showing how our conceptual tools are intrinsically suited to address the demands of our lived experience and intellectual environment.

The part of the Kantian thesis that appeals to semanticists and cognitive scientists, then, is ultimately subordinated to its more foundational aspects. Kant's theory on the conditions of representation, though sharing some similarities with the representational theories of English and Scottish empiricism, stresses that *normative pressures* play a key role in shaping cognitive practice and, by extension, its phenomenological appearance. Normative pressures are the implicit or explicit standards and expectations – arising from cultural, logical, and epistemic norms – that guide how cognitive practices should ideally function. As a result, cognitive practice is not merely a passive

[4]This aspect of Kant's theory holds technical value for various branches of semantic reflection and cognitive science, as it anticipates certain ideas about the structuring of meaning that are compatible with Montague's intensional theory of natural languages (1970). It also anticipates refined versions of the notion of inferential competence, which can be operationalized by Steedman's work (2000) on categorical grammar, particularly in the context of *Combinatory Categorial Grammar (CCG)*, providing tools for modeling the inferential structures underlying syntactic and semantic integration. However, these represent only the more superficial repercussions of Kant's thesis underlying theoretical depth.

process – even when analyzed as a simple structure of cognition and represented as a machine or computational system. Instead, it is actively shaped to align with these standards, transforming how it is experienced introspectively as intentional thought.

At this level, the only *psychological datum* that remains is the aspect of cognition capable of performing higher-order tasks, responding to these normative demands. For example, when we study psychological processes from the perspective of how they *ought to function* under normative pressures, we analyze them as the structure of transcendental subjectivity – an idea introduced by Kant's theory of apperception (*KrV* A84/B116 - A130/B169) and later developed by Husserl (*Ideas*, §33-36). This perspective examines cognition not merely as a series of psychological events but as an idealized structure that meets certain normative standards. In this framework, cognitive processes are seen as inherently guided by normative principles, striving to align with an ideal model of subjectivity that represents the highest order of intentional awareness and rational coherence.

We can then expect that psychological data, turned into phenomenological material, will play the role that Edmund Husserl outlined in the *Logical Investigations* (*Prolegomena*) as *Wissenschaftslehre*, or theory of science, under the completion of these higher order tasks. As stated by HUSSERL:"it is possible to construct," or to generate, "out of purely categorial concepts, many definite concepts of possible theories or pure 'forms' of theories" (2001, p. 155).

Husserl's theory, from his early theses on intentional content in *Logical Investigations* (1900-1901), through the development of noetic-noematic content in *Ideas I* (1913), to his later explorations of transcendental idealism, science, and the life-world in *The Crisis of European Sciences and Transcendental Phenomenology* (1936), consistently develops the concept of phenomenological data as a unique type of meaningful content. This phenomenological data is distinctive because it reveals ideal or eidetic objects – entities that can be examined as mathematical or structural objects.

In *Ideas* (1983), Husserl says that "just as the datum of individual or experiencing intuition is an individual object, so the datum of eidetic intuition is a pure essence" (p. 9). We see this shift to an eidetic intuition, as described by Husserl, as the conclusion of Kant's theory concerning high-order syntheses, which guide representational processing. They serve the purpose of bringing the cognitive content into compliance with universalizable representation standards. In doing so, they constantly strive to reach a ceiling, which we shall refer to as the phenomenological ceiling, which stands for the

upper bound of the evaluation range that is represented by cultural norms and scientific paradigms. It is possible to reconcile the phenomenological process with the "world of life" (*Lebenswelt*), as Husserl defined it in the *Cartesian Meditations* (1973) and as elaborated in *Crisis of European Science (*1970), by interpreting the appearance of a ceiling as a reflection of the pressure from the practical and inter-subjective world toward the conception of goals and trajectories of success. This suggests the empirical hypothesis that cognition tends to assume its ideal status, its ability to internalize patterns derived from science and culture, along with its ability to preserve meaning – or absence of nonsense – in its practical life. Husserl underscores this by emphasizing that phenomenological inquiry is fundamentally about uncovering the sense inherent in our experience – a sense that exists prior to any philosophical theorization and remains unalterable by it. As he explains in *Cartesian Meditations*:

> (…) phenomenological explication does nothing but explicate the sense that this world has for us all, prior to any philosophizing, and that it obviously gets exclusively from our experience; namely, a sense that philosophy can uncover but never alter (HUSSERL, 1991b, p. 151).

The descriptive-phenomenological description endeavors to delineate these cognitive occurrences by means of introspection. It registers the cognitive procedures that have already undergone modifications due to the normative pressures, capturing them as a categorical framework or a standard method of reasoning transformed into a localized realm of cognition or a formal ontology. This process anchors frameworks that enhance logical categorizations, functioning within an intuitive field of categorical or idealized order in a unity of self-knowledge (*Selbsterkenntnis*)

3.2 Normative pressures, rational standards and scientific paradigms

Phenomenological data – structured representations informed by rational standards – can be empirically evaluated for their responsiveness to prevailing norms. A central challenge is how to conceptualize "intelligence" in a way that aligns with the normative and scientific standards of a given era. Without a comprehensive theory explaining how scientific knowledge integrates into our cognitive framework – much like Kant's systematic approach to cognition – we risk failing to equip individuals or machines with

the ability to genuinely understand and generate syntheses that *represent* the system's inferential capabilities.

In the context of artificial systems, this involves assessing how effectively a machine aligns its outputs with linguistic or scientific standards and refining its algorithms as needed. For example, persistent errors, such as misinterpreting ambiguous syntax, reveal gaps in normative sensitivity that can be addressed through targeted adjustments and training. This iterative process mirrors the broader challenge of aligning cognition with the standards that define intelligence in a particular time and context.

It is widely accepted today that we internalize patterns that refer to normative structures or standards that guide cognition and behavior, including those derived from scientific paradigms, linguistic frameworks, cultural norms, and logical principles. A shared theme among researchers like Noam Chomsky (1980), Jerry Fodor (1975), Stephen Pinker (1994), and Michael Tomasello (1999) is the emphasis on the innate or learned structures that shape and regulate human cognition. However, this recognition does not fully address the *transcendental challenge*. One of Kant's greatest challenge lies in demonstrating how normative sensitivity can be internalized – by humans or machines – without collapsing into dogmatic presuppositions or subjective introspection.

His theory responds to this difficulty by adopting a transcendental approach, that ensures that cognition is inherently aligned with the practical challenges of the subject. These structures serve as the framework through which all possible experiences are synthesized, ensuring that the principles guiding thought and inference are both universally valid and intimately connected to the limits and capabilities of human understanding. This ensures that concepts are valid not merely in abstraction but as part of a system of knowledge grounded in the lived conditions of human cognition.

Kant's theory of possible experience is accomplished by our capacity to *transcendentally deduce* second-order concepts as those that are compatible with the experience that activates those concepts to conscious awareness. Therefore, concepts that are not intended to represent issues pertinent to our type of experience – aligned to our life and practical challenges – would be disregarded because they cannot be expressed by a "I think" (*KrV* A 116) or "apperception" concept (an unifying synthesis). It would not be possible to deduct them transcendentally. This forms a *ceiling* that characterizes the limits of what can be represented with reference to the conditions of human intuitive representation.

Kant formulated his theory of cognition under the influence of the prevailing Newtonian scientific paradigm. Yet, it is reasonable to suggest that

the essential aspects of his doctrine might extend beyond the constraints of this paradigm. We can assume that, in each historical epoch, there exists a cognitive framework aligned with a phenomenological ceiling that anchors the certainties of that time. This framework will present itself introspectively in a way that is altered or adapted to the normative pressures of that ceiling. Consequently, the way we access this content introspectively will always ideally align with how it is accessed externally through a social or natural standard governing our thought – or the operation of the "internal machine." The introspective data will emerge clearly once it has been modified or adjusted to meet the standard requirements of the phenomenological ceiling.

3.3 Discussion with Naturalism, Hegelianism and the problem of introspection

Kant's theory, as we have seen, generates ideal content – guiding principles about how thought must operate to meet the demands of cognition, particularly as it extends beyond experience to encompass scientific laws and modal concepts. However, his theory of synthesis is not supra-empirical; it does not transcend all conditions of verification or evade scrutiny against external standards. Rather than isolating high-level cognitive content from empirical observation, Kant's framework emphasizes continuous evaluation and refinement based on real-world interactions and behaviors. This process is guided by a reflective ideal: the standard of what constitutes a possible experience *for humans*. Such a standard provides the basis for aligning cognition with empirical reality while maintaining its rational coherence. The challenge, then, lies in determining this standard without falling into a dogmatic stance about how we should think, infer, and ground our formal ontology and the language of thought.

Among commentators in recent decades, there is a relatively stable consensus regarding how Kant views the role of imagination in establishing the parameters for *a priori* synthetic representations. Guyer (1987), Makkreel (1990), Longuenesse (1998), and Ameriks (1982) converge on the view that imagination in Kant's theory operates as a dynamic and synthetic faculty, which not only unifies representations but also imbues them with interpretive meaning. However, this perspective still leaves open the central question: how does this unification contribute to the formation of a ceiling for filtering *phenomenological data*, and, more importantly, how can we avoid conceiving this ceiling for data dogmatically, as a set of presuppositions or arbitrary conventions detached (*alienated*) from the concrete conditions of life and

experience? More Hegelian-focused commentators, such as Robert Pippin, address this concern more directly by emphasizing the centrality of normativity in the process of cognition. Pippin in *Hegel's Idealism*, argues that for Kant, critical philosophy "is not merely concerned with how the mind happens to work, but with what makes the mind's operations valid or justified, with what makes the 'right' to such claims possible" (1989, p. 14). This focus on the *quid juris* aligns with the effort to avoid a dogmatic conception of phenomenological data, instead framing this data within a sociological, inter-subjective sphere that respects its normative conditions.

McDowell (1994b), Sellars (1956), and Brandom (1994a) contribute to a robust critique of both empiricist and coherentist accounts of cognition, proposing that normativity emerges from the interplay of rational reflection, linguistic practices, and historical traditions. Their work aligns with Kantian and Hegelian insights into the interdependence of thought and normativity, reinforcing the idea that cognition is both shaped by and shapes the frameworks of meaning and justification within which it operates. These theories, however, place all their emphasis on the inferentialist aspect, often focusing on the "space of reasons" and the inferential relationships within linguistic and conceptual frameworks. The authors thus refrain from addressing the intricacies of the transformation process through which raw or problematic cognitive content becomes structured, introspectively accessible data.

To explore the diametrically opposite perspective, we can consider naturalistic accounts, which ground meaning in causal or functional relationships, avoiding reliance on normative principles. Hegelian-based authors, therefore, stand in contrast to Dennett's view in *The Intentional Stance*, where he argues that "Intentionality is not some mysterious feature, but is entirely explicable in terms of the design of the intentional system" (DENNETT, 1987, p. 15). Dennett treats cognitive processes as functional responses that can be analyzed externally, aligning with the representationalist aspects of Kant's synthesis thesis. He asserts that mental states derive meaning from observable patterns and functional roles, rather than being hidden or dogmatically interpreted as mystical introspective states. At first glance, Kant's theory, by exploring a way to detect high-level, subtle content, supports the thesis that these states are neither mysterious nor undetectable.

Dennett's approach also aligns with ours to the extent that we can attribute intentional states even to animals, as long as their *conditions of meaningfulness* – or the boundaries between sense and absurdity – are compatible with ours. Even individuals considered "crazy" display a degree of

intentional predictability, as long as their actions remain interpretable within a rational framework. Dennett's approach in *Darwin's Dangerous Idea* would suggest that this compatibility is the result of evolutionary or natural processes, making nature the ultimate source or grounding force behind why certain mental structures are possible or meaningful for us: "The mind is a product of evolution; it is shaped by natural selection to do tasks that enhance fitness, not to produce truths for their own sake" (DENNETT, 1995, p. 373). However, we do not need to follow Dennett's direction in naturalizing this ceiling, as though nature itself were the metaphysical or supersensible condition that determines why our cognition is the way it is.

In contrast to naturalist theories, classical phenomenology has a distinct advantage: it does not need to assume that there is a more "natural" or sociologically rational basis for establishing a cognitive framework. In other words, while we might agree that animals can have intentional states – thoughts or mental states directed at things or goals – as long as their sense of meaningfulness fits within a framework we can recognize, we do not need to interpret this ceiling in purely naturalistic terms.

The strength of a phenomenological approach lies in its ability to avoid reducing cognitive ceilings to purely naturalized, biological, or sociological explanations. Instead, it focuses on the essential structures of experience as they are shaped by the self-conscious reproduction of rational standards. For example, consider how the process of reflective debate – where consciousness critically examines its own assumptions – creates the conditions for shifting from one methodological paradigm to another, ultimately arriving at new rational standards. What emerges as the immanent datum of this process is a new conscious reality: a fresh horizon of modal representations and a renewed scientific self-image.

Conclusion

Evaluating intelligent performance, a central topic in artificial intelligence and cognitive sciences, entails examining how effectively an entity – whether human or AI – can manage tasks that demand adaptability to the normative frameworks of its historical context. This includes the capacity to intelligently assimilate insights from contemporary scientific paradigms and prevailing cultural norms. Our article argues that Kant's theory of synthesis lays the groundwork for cognitive processing capable of transforming psychological data into introspective phenomenological content, as long as this data represents an ideal ontology of categorical objects consistent with the

inferences drawn from the higher-order frameworks of scientific paradigms and cultural norms.

Synthetic representational systems are pivotal in Kant's framework as they mediate the convergence of representation and inference, transforming raw sensory inputs into structured, meaningful content. Kant's transcendental synthesis achieves this by integrating the representational function of the categories of understanding with the inferential demands of judgment. Through this process, sensory data are not merely organized but are infused with logical coherence and conceptual structure, generating what we term "phenomenological data". These data, conditioned by the normative standards of possible experience, emerge as introspectively accessible and dynamically shaped by the interplay between representational forms and inferential processes. In this manner, a harmony is established between the theoretical content of what can be affirmed and its possibilities for verification. This harmony, considered from a theoretical perspective, fosters a form of representationalism that aligns with inferential and hypothetical contents. For Kant, this task is fundamentally tied to his theory of apperception, which seeks to unify concepts and intuitions within the structure of human cognition.

This thesis has the following effect: the theoretical presuppositions of a synthesis-theory that describes the categories that condition possible experience, or the inferences representable within of this framework, produce the *datum* of a logical theory about inference. By the time we express these patterns in syntactical terms and process or analyze this data through a syntactic framework that captures the structure of the relevant logical relations, the foundational work has already been accomplished through a synthesis that idealizes (in an apperceptive manner) those relations as a unified concept.

In the Kantian framework, this combination of inferentialism and representationalism emerges as a thesis about cognition and its *a priori* structure of mediation. It parallels Fodor's concept of the language of thought, which posits a formal system underlying mental representations, and aligns with Husserl's formal ontologies, which focus on the essential structures governing the relationships between categories within consciousness.

This theory excels in explaining "intelligence" in a way that aligns with the cognitive abilities necessary for making sound judgments, not just in a computational sense, but also in a manner consistent with some reflective ideal. The ideal normatively influences our reasoning by providing an paradigmatic image for our self-consciousness, and it offers a framework that

shapes our perception of rationality more broadly, aligning with the intersubjective standards in place.

The way we discover this ideal, however, is controversial. As we will discuss in the appendix, this does not require an epoché, provided it follows a reflective principle robust enough to avoid making introspection a captive of the naturally occurring effective flow of inner sense, or of any set of dogmatic normative presuppositions, such as the assumptions and cultural biases internalized by a particular group. Our conclusion will be that the transcendental attitude already possesses the necessary reflective character to incorporate a moderate skeptical trigger – capable of generating representation in its optimal state – without losing the connection of this content to a practical purpose, aligning it with the subject's cognitive needs.

In the broader scope of the article, this discussion highlights how Kant's *a priori* synthesis establishes a framework for understanding the unity of judgment beyond empirical verification, offering a model for specifying higher-order contents, like presenting inferential content representatively. This model ultimately enables a cohesive framework for conceptual judgments and provides insight into how scientific certainty and self-knowledge evolve through a structured but adaptable process of cognitive integration.

It may be argued that the search for a cognitive capacity capable of performing these kinds of tasks is not a novel undertaking in philosophy. Assume that the common ideal of knowledge is science in all its forms, including the mathematical systematizations that allowed ancient cultures to produce architectural wonders. This applies not only to the fully developed methodologies of modern science but also to earlier scientific aspirations and prototypes, such as ancient natural philosophy. Even in these early forms, the systematic search for universal principles and structured explanations signals a commitment to organizing knowledge in a way that transcends mere observation.

These conditions show a unifying challenge for Kant's theory of synthesis: determining what counts as the raw data of a theory of science, or an epistemology, and removing the (dogmatic) obstacles that prevent reflection from arriving at introspective (phenomenological) material consistent with the operation of this science. The *Critique of Pure Reason* deserves to be considered a top contender for the most significant philosophical work of modern times, not only because it was the first to acknowledge the importance of the void that synthetic activity must fill in our cognitive processes, but also because it shed light on the misconceptions surrounding this synthetic activity in the past.

Appendix: Beyond Introspection: Reflective representations, epoché and the Ceiling of Meaning

Our paper focuses on the *Critique of Pure Reason*. We contend it is within the *Transcendental Analytics* that the underpinnings of Western phenomenological thought of the past two centuries lie. This choice is not meant to diminish the importance of Husserl, who established phenomenology as a rigorous science; rather, it results from a determination to preserve the most basic tenets of a phenomenological perspective on the mind. This approach embodies a stance against a standardized or singular method of accessing the phenomenological dimension. In our view, Husserl's reduction method, particularly the epoché (*Ideas*, §56-60), is not the only means of achieving such access. Instead, we propose that alternative pathways, rooted in Kant's transcendental framework, can offer equally valid approaches to engaging with the structures of consciousness.

We believe that the principle of phenomenological conversion does not need to be exclusively centered on what is filtered through this method, as long as we can reflectively study how human cognition adapts to normative pressures to form an ideal unity or higher-order representation. Reflective access, however, requires a certain degree of skepticism, and the option for a radically skeptical approach was already available to Kant.

Our argument is that the reflective trigger for the representation of phenomenological data requires skepticism about the natural attitude, which can be achieved in different ways. For example, Kant achieved it through what he learned from Hume's skepticism regarding the nature of our modal conceptions and inductive reasoning. This skepticism led him, in the *Critique of Pure Reason* (*KrV*), to develop a notion of objective "necessity" and unifying representations centered on the transcendental subject. Later, in the *Critique of the Power of Judgment*, Kant expands this framework by treating reflection as a source of subjective and regulative foundations within a systematic structure: "Thus the distinction of possible from actual things is one that is merely subjectively valid for the human understanding" (AA 5:401)[5].

The essential aspect of the phenomenological reduction that we aim to preserve is its advance beyond psychology and a purely natural orientation. This process is significant because it transforms raw data into phenomenologically enriched content, filled with meaning specifications that align with a normative ceiling – an ideal standard for how representation should manifest in intentional acts. Through this transformation, raw

[5] KU" for *Kritik der Urteilskraft*.

experiences are not merely processed; they are refined into structured, meaningful content that meets intentionality's normative criteria, illustrating how cognition ideally functions within this phenomenological framework.

The key point is that this process does not require an *epoché*, as long as it obeys a reflective principle that has sufficient strength to prevent introspection from imprisoning itself in the course of the internal sense, losing connection with broader, objective, or intersubjective frameworks. The process does not necessarily require the suspension of judgment about the external world as traditionally understood in phenomenology. Instead, it relies on a reflective principle robust enough to prevent introspection from becoming confined solely within the internal, subjective realm of experience.

This approach ensures that we are not blind to the introspective "datum" – the subjective content or experiential data – produced by these different cognitive systems and reveals this introspective datum as something that can be accessed externally as well. Instead, we actively test and refine our understanding of these thought processes through empirical methods, showing that high-level, structured content is subject to empirical scrutiny and is responsive to real-world observations and adjustments of intelligent behavior.

References

AMERIKS, K. *Kant's theory of mind: An analysis of the paralogisms of pure reason*. Oxford: Clarendon Press, 1982.

BELL, J. L. *Toposes and local set theories: An introduction*. Oxford Logic Guides, Vol. 14. Oxford: Clarendon Press, 1986a.

BRANDOM, R. *Making it explicit: Reasoning, representing, and discursive commitment*. Cambridge, MA: Harvard University Press, 1994a.

CARNAP, R. *Meaning and necessity: A study in semantics and modal logic*. Chicago, IL: University of Chicago Press, 1947.

_____. On the character of philosophic problems. *Philosophy of Science*, v. 1, 1934, p. 5-19.

_____. *The logical structure of the world: Pseudoproblems in philosophy*. Translated by R. A. George. Berkeley: University of California Press, 1967. (Original work published 1928).

_____. *The logical syntax of language*. Translated by A. Smeaton. London: Kegan Paul, Trench, Trubner & Co., 1937. (Original work published 1934).

CHOMSKY, N. *Rules and representations*. New York: Columbia University Press, 1980.

DEDEKIND, R. Reflections on the relational abilities of the mind. In: SINACEUR, H.; PANZA, M.; SANDU, G. (Eds.). *History and philosophy of mathematical thought*. Cambridge: Cambridge University Press, 2015. p. 24.

DENNETT, D. C. *The Intentional Stance*. Cambridge, MA: MIT Press, 1987.

_____. *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. New York: Simon & Schuster, 1995.

DUMMETT, M. *The logical basis of metaphysics*. Cambridge, MA: Harvard University Press, 1991a.

EVANS, R. *Representational systems: Understanding the foundations of cognitive models*. Oxford: Oxford University Press, 2022. p. 43.

FODOR, J. A. Propositional attitudes. In: CHALMERS, David John (Ed.). *Philosophy of mind: Classical and contemporary readings*. New York: Oxford University Press, 2002.

_____. *The language of thought*. Cambridge, MA: Harvard University Press, 1975.

FRIEDMAN, M. Carnap's Aufbau reconsidered. In: *Reconsidering Logical Positivism*. Cambridge: Cambridge University Press, 1999. p. 89-113.

GUYER, P. *Kant and the claims of knowledge*. Cambridge: Cambridge University Press, 1987.

HUME, D. *A treatise of human nature*. Oxford: Clarendon Press, 1978.

HUSSERL, E. *Cartesian meditations: An introduction to phenomenology*. Translated by Dorion Cairns. Boston: Kluwer, 1991b.

_____. Ideas pertaining to a pure phenomenology and to a phenomenological philosophy. Translated by F. Kersten. The Hague: Martinus Nijhoff, 1983.

_____. *Logical investigations*. 2 vols. Translated by J. N. Findlay. London: Routledge, 2001.

_____. *The crisis of European sciences and transcendental phenomenology*. Translated by D. Carr. Evanston, IL: Northwestern University Press, 1970.

KANT, I. *Critique of pure reason*. Cambridge: Cambridge University Press, 1998.

_____. *Critique of the power of judgment*. Edited by Paul Guyer and Eric Matthews. Cambridge: Cambridge University Press, 2000.

_____. Letter to Marcus Herz, February 21, 1772. In: ZWEIG, A. (Ed. & Trans.). *Philosophical correspondence 1759–99*. Chicago: University of Chicago Press, 1772.

KITCHER, P. *Kant's transcendental psychology*. New York: Oxford University Press, 1990.

LAMBEK, J.; SCOTT, P. J. *Introduction to higher-order categorical logic*. Cambridge: Cambridge University Press, 1986b.

LEIBNIZ, G. W. *Dissertatio de arte combinatoria*. Leipzig: Typis Weidmannianis, 1666.

_____. *New essays on human understanding*. Translated by Peter Remnant and Jonathan Bennett. Cambridge: Cambridge University Press, 1981.

LONGUENESSE, B. *Kant and the capacity to judge: Sensibility and discursivity in the transcendental analytic*. Princeton: Princeton University Press, 1998.

MAKKREEL, R. A. *Imagination and interpretation in Kant: The hermeneutical import of the critique of judgment*. Chicago: University of Chicago Press, 1990.

MONTAGUE, R. Universal grammar. In: THOMASON, R. (Ed.). *Formal philosophy: Selected papers of Richard Montague*. New Haven: Yale University Press, 1970. p. 222-246.

NORTHOFF, G. *The Kantian brain: Understanding the neurophilosophy of synthesis*. Cambridge, MA: MIT Press, 2018.

PINKER, S. *The language instinct: How the mind creates language*. New York: HarperCollins, 1994.

PIPPIN, R. B. *Hegel's idealism: The satisfactions of self-consciousness*. Cambridge: Cambridge University Press, 1989.

SELLARS, W. Empiricism and the philosophy of mind. In: FEIGL, H.; SCRIVEN, M. (Eds.). *Minnesota studies in the philosophy of science*. Vol. 1. Minneapolis: University of Minnesota Press, 1956. p. 253-329.

STEEDMAN, M. *The syntactic process.* Cambridge, MA: MIT Press, 2000.
SUPPES, P. *Representation and invariance of scientific structures.* Stanford: Stanford University Press, 2002.
TOMASELLO, M. *The cultural origins of human cognition.* Cambridge, MA: Harvard University Press, 1999.
WANG, H. *Beyond analytic philosophy: Doing justice to what we know.* Cambridge, MA: MIT Press, 1986.

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