

## The principle of sufficient reason in Kant's *Critique of Pure Reason* and its applications: the analogies, the antinomies and the regulative principles

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**Abstract:** The purpose of this article is to indicate a possible relation between the principle of sufficient reason (PSR) and other concepts and principles involved in the *Critique of Pure Reason*, particularly that of causality, as exposed by Kant in the Second Analogy, Third Antinomy, and regulative principles. In general terms, two problems will be dealt with here: (1) what is the nature of the PSR? And (2) how does the relationship of the PSR to the concepts and principles mentioned happen? Regarding the first problem, the hypothesis that PSR is a principle of a logical character will be supported, and these conditions will be defending the thesis that PSR is a logic that can have a valid and invalid application, both by understanding and by reason, as exemplified in the Second Analogy (valid application of the understanding), in regulative principles (valid application of reason), and the Third Antinomy (invalid application of the understanding and reason). The discussion of the reducibility (MELO; LONGUENESSE; HIRATA) or their reducibility (KAUARK) of the PSR to causality in the Second Analogy will also be mentioned, concerning which it will be indicated that there are restricted points of view in the face of the broader considerations on the definition and the possible applications of PSR.

**Keywords:** Principle of Sufficient Reason; Causality; Antinomies; Regulative Principles; *Critique of Pure Reason*; Kant.



## 1. Historical background<sup>1</sup>

Historically, the first explicit definition of the principle of sufficient reason (PRS) is found in the definition of Leibniz (1646-1716), expounded in the *Demonstratio in a Catholicarum Conspectus* (1668-9), then in the *Confessio Naturae contra Atheistas* (1668), as well as its presentation in *Theoria Motus Abstracti* (1670-1), *Demonstratio Propositionum Primarum* (1671-2) and *De Existentia* (1676)<sup>2</sup>. Furthermore, Leibniz also mentions the PRS in paragraphs § 44 and 196 of *Theodicy* (1710) and in § 32 of the *Monadology* (1714).

As the purpose of this article is not to compare the possible variations of the conceptions of the PRS proposed by Leibniz in his several texts, we will take, for the sake of delimitation, Leibniz's definition of the PRS presented in §32 of his *Monadology* which is made in opposition to the principle of non-contradiction (PNC). So, he writes in this passage:

31. Our reasoning is based on two great principles: that of contradiction, by which we consider false what it implies, and true what is opposed to false or is contradictory to it.
32. And that of Sufficient Reason, by which we understand that some fact cannot be taken as true without there being a sufficient reason for being so and not otherwise, although often such reasons cannot be known to us (LEIBNIZ, *Mon.*, § § 31 and 32).

In that book, Leibniz says that the PNC states that a proposition cannot be true and false at the same time, which is to say that if a proposition is true, then its contradictory is false, and if it is false, its contradictory is true. In turn, the PRS establishes that it is necessary to presuppose a sufficient cause or reason for any event to be considered true or existent and to be so and not otherwise. According to Leibniz, although the PRS requires the indication of conditions, grounds, or reasons, however, these may be unknown.

In general, Leibniz expresses both the PRS and the PNC as logical principles of knowledge, which means that they are seen as forms of thought that can have applications in philosophical knowledge, whose purpose is, within his system of philosophy, to sufficiently support the ideas of substances in general, both created (Monads) and divine (God).

In general terms, Leibniz conceives the PRS in *Monadology* broadly, including sufficient reasons of a formal, natural (external and internal), and metaphysical nature. Its starting point is a double division of the concept of truth, namely, truths of reason (which are necessary and their opposite impossible) and truths of fact (which are contingent and their opposite possible) (*Mon.*, § 33). On the one hand, sufficient reasons for necessary truths from finite series are merely analytical and found in simple concepts and primitive principles, of which definition can no longer be given (*Mon.*, §§ 34 and 35). On the other hand, sufficient reasons for truths from infinite series have a mechanical character and are of two kinds: physical (or external) and mental (or internal). The former has as a sufficient reason and the efficient causes linked to the infinite series of external relations of material and corporeal character, while the latter has as a sufficient reason and the final causes linked to the also infinite series of internal relations of a volitional, dispositive, appetitive character, etc. (*Mon.*, § 36). Leibniz's culmination is the postulation of God as a supreme and ultimate sufficient reason, which is placed outside the two mechanical series but is at the same time presupposed as the primary foundation of both series, as well as of the necessary harmony existing between them (*Mon.*, §§ 37-39).

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<sup>1</sup>We will use the following abbreviations: *Critique of pure reason* (1781/1787) by CRPu; *Manual of logic* (Jäsche, 1800) by ML; *Prolegomena* (1783) by Prol.; *Monadology* (1714) by *Mon.*; Principle of sufficient reason by PRS; Principle of non-contradiction by PNC; Modus tollens by MT; Modus ponens by MP; Principle of homogeneity by PH.

<sup>2</sup>Ver HIRATA (2017).



In *Leibniz and Hobbes: Causality and Sufficient Reason* (2017), Hirata indicates a certain influence of the Hobbesian doctrine of causality in the formulation of the Leibnizian PRS, in the sense that Leibniz appropriated Hobbes' definition that every effect has its cause necessary to formulate your PRS. In particular, the author conceives the notions of reason and cause in terms of requirement and, in addition, the double implication between sufficient/whole cause and effect/existence, according to what she believes to be the great differential of Leibniz's philosophy regarding the PRS.

Similar to what we indicated above, Hirata shows that Leibniz's PRS has a maximum breadth of knowledge, in the sense that knowledge such as morals, logic, physics, and metaphysics are articulated and established thanks to the PRS. In this sense, the author rightly states that the PRS is seen by Leibniz as a cosmo-teleological principle in his philosophical system since it re-establishes the primacy of the final cause concerning the efficient cause and, with that, subordinates' physics to the metaphysics. That is, the Leibnizian PRS implies both knowability with the provision of efficient causes and a teleological primacy capable of providing final causes, thus resulting in the passage from proximate reason (efficient/mechanical causality) to ultimate reason (final causality)<sup>3</sup>.

In turn, Kant's conception of the PRS – as we will indicate below – generally follows the same definition as Leibniz in *Monadology*, conceiving the PRS as a logical principle alongside the PNC. However, Kant's differential concerning Leibniz is the interest of the former in establishing parameters to distinguish valid and invalid applications of the PRS since the latter, as a mere logical principle, can be used by the understanding or by reason, both without objective content (as in the case of its use by traditional or dogmatic metaphysics), or being employed with objective content (as in the case of its use by transcendental philosophy).

## 2. The principle of sufficient reason as a logical principle in Kant

Similar to Leibniz, Kant presents the logical definition of the PRS, together with that of the PNC, in the introduction to the ML (Jäsche), in part VII, which deals with the formal principles or criteria for the definition of truth. Initially, both are conceived as the necessary, but not sufficient, conditions of truth, as this concept still depends on its reference to the empirical content, which is not, in principle, placed in the logical or formal definition of truth<sup>4</sup>.

On the one hand, Kant claims that the PNC is an internal and negative criterion of logical truth and determines that the logical possibility of knowledge, since it only prescribes that thought does not contradict itself<sup>5</sup>.

On the other hand, the PRS is an external and positive criterion of logical truth and determines the logical reality of knowledge, as it prescribes that thought be logically well-founded. Kant defines the PRS by satisfying two conditions: "(a) it has foundations (Gründe), and (b) it has no consequent. (Folgen)

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<sup>3</sup> This article aims to analyze the applications of PRS in the context of Kant's theoretical philosophy and not in his critical system as a whole. the unconditioned, taking into account the requirement of a principle of purpose in the teleological realm capable of orienting us towards final and/or ultimate causes. Despite this, it will be indicated below that the teleological principle (Zweckmässigkeit), introduced by Kant in the Third Critique, as a general foundation to give unity to his entire critical system can be seen as a kind of valid application of the PRS by reason in all its aspects – theoretical, practical, and aesthetic (see item 3.1-a).

<sup>4</sup> It should be noted that this passage from the ML organized by Jäsche contains some obscurities, among which the fact that Kant begins with the indication of two formal principles of truth, the PNC and PRS (Log, AA 09: 51), but ends with the presupposition of four logical principles, namely: the PNC, the PRS, the identity and the excluded middle (Log, AA 09: 53). In this regard, LOPARIC (2000, p. 67) comments that Kant rejects the principle of the excluded middle because it does not fit his constructivist conception of science.

<sup>5</sup> It is worth noting that Kant introduces the PNC into the CPU as the 'supreme principle of all analytic judgments' (KrV, B 191).

false” (Log, AA 09:51). Before analyzing the definition proposed by Kant, properly speaking, it is worth calling attention to the fact that, in the continuation of his definition, he makes a distinction between two types of PRS, one negative and the other positive, in which he contextualizes his definition in terms of two implication relations, respectively, the modus tollens (MT) and the modus ponens (MP). That is, the negative PRS is related to the MT and the positive PRS to the MP, and the implication relationship that appears in both, is interpreted with an emphasis on the consequence, in the sense that the truth of the consequence determines the truth of the foundation<sup>6</sup>.

As to the merits of Kant’s definition of the PRS, three observations should be made. First: it reproduces in general lines the definition proposed by Leibniz, but with the following expository difference: while Leibniz starts from the truth of the consequence to establish a sufficient reason (equally true), conversely, Kant starts from sufficient reason (without determination of truth) to establish the truth of consequence. However, it should be noted that this difference is maintained only in the nominal definition of the PRS, as Kant follows Leibniz’s exposition by making the distinction between negative and positive PRS – as explained in footnote 8.

Second: etymologically, the German terms used by Kant in defining the PRS are Grund and Folge – respectively, for the first and second conditions to be satisfied. On the one hand, the term Grund means foundation or basis, and, in a more restricted sense, it can mean reason, cause, principle, or argument. On the other hand, the term Folge means series, sequence, succession, continuation, consequence, consequent, and, in a stricter sense, it can mean effect. This etymological note is important to highlight that the definition of Kant’s PRS is logical and is not necessarily limited to an implicative relation of a causal nature - that is, of cause and effect - but to any implicative relation of a successive character, sequential or continued, where two elements necessarily appear as conditions: (1) a predecessor (ground or Grund), and (2) a successor (consequence or Folge).

Such a definition of the PRS as a logical principle means that it is seen only as an empty form, whose content of its two conditions (Grund and Folge) can be filled by various concepts or judgments, whether true or false. It is dependent on the fulfillment of these two conditions by true or false contents that the PRS may have a valid or invalid application or use, either by understanding or reason. Eventually, these two conditions of the PRS definition can be satisfied by a causal relationship where the predecessor is a cause and the successor an effect – as Kant does in several passages, as in the case of the second analogy and the third antinomy. (to be seen ahead).

To close this second observation, it should be clarified that the fact that Kant deals, soon after the definition of the PRS, with two implicative relations of a causal character – the MT and the MP – should not be interpreted in the sense that the PRS is limited to the concept of causality, but rather that the PRS is only instantiated or exemplified to causality in this context, although it can be applied to other different conceptual contexts, as in the example of antinomies and regulatory principles - as will be shown in the following text.

Third: for Kant, the PRS establishes the concept of logical or formal truth and not necessarily that of transcendental or empirical truth<sup>7</sup>. This means that, from a strictly logical point of view, the PRS has only logical/formal validity and not necessarily objective validity. Notwithstanding the formal character of the PRS definition, Kant aims to make a transcendental interpretation of this principle, indicating an application

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<sup>6</sup> In the case of negative PRS (MT), Kant understands that the truth of the consequence determines the truth of the ground only negatively, whereas, in the positive PRS, the truth of all consequences determines the truth of the foundation.

<sup>7</sup> For Kant, the transcendental truth concept expresses the relation of concepts to pure intuitions (space and time), while empirical truth is the application of both to empirical intuition (KrV, B185/269). In this regard, see LOPARIC (2000, p.212-17).



of the PRS to the a priori conditions of knowledge (concepts and/or intuitions). From this perspective, the PRS can have two possible applications: (1st) a valid application – when the PRS is applied to concepts (of understanding or reason) linked to some reference in intuition (pure or empirical); (2nd) an invalid application – when the PRS is applied to concepts (understanding or reason), without any intuitive reference (pure or empirical). Kant shows that this double application of the PRS – valid and invalid – is made both by the understanding and by the reason and can be seen in different passages of the CRPu for example: in the second analogy, there is a valid application of the PRS by the understanding in the third antinomy, there is an invalid application by the understanding and reason; and, finally, in regulatory principles, it has a valid application by reason. These topics will be explained below.

### **3. Valid applications of PRS: the second analogy and regulatory principles**

#### **3.1. Valid use of PRS by understanding the second analogy of CRPu**

It is in the analogies of the CPu experience that we find three principles or rules whose purpose is to determine the existence of every phenomenon concerning the unity of all time. This means that analogies are rules of universal determination of time, as principles of the possibility of experience in general.

For Kant, the three principles or analogies of experience are the permanence of substance (KrV, B 224 ss), temporal succession according to the law of causality (KrV, B 232 ss), and simultaneity according to the law of reciprocal action or community (KrV, B 256 ss). Thus, concerning the three rules, these determine the existence of phenomena in time in general, thus enabling the reality of the entire phenomenon in temporal relations. However, we will leave aside the first and third analogy in this investigation since our main point is to examine the second analogy that deals directly with the concept of causality and its possible relationship with the PRS - although it is possible, in principle, to establish a relationship between the PRS and all three analogies.

It follows that, in the second analogy of the CPu, Kant exposes the connection of cause and effect in nature as an objective determination of temporal succession and experience, that is to say, that the perceptions belonging to a possible experience become real, according to their positions determined in time, as phenomena in a necessary causal relationship. Therefore, the law of causality enables and determines empirical knowledge and the objective succession of phenomena in the experience and the temporal order.

In turn, Kant clarifies, in this passage, that the PRS is “the foundation of possible experience, namely, of objective knowledge of phenomena concerning their relations in the successive series of time” (KrV, B 246). That the PRS grounds (objective) knowledge in nature and its successive relationship of phenomena in the temporal sequence.

According to Kant, the PRS conceives the conditions of determinability of the object of experience in the temporal succession in a necessary way, that is, sufficient reason is “the rule, however, for determining something according to the temporal succession is this: the condition under which it follows always (that is, necessarily)” (KrV, B 246). In other words, the PRS establishes the reasons for the possibility of the relationship of phenomena in the succession of time. Therefore, sufficient reason is understood as providing enough conditions to validate the necessary connection of the antecedent according to which the subsequent always follows it in time.

In general, Kant’s theoretical system conceives that all objective scientific knowledge belongs to the order of the synthesis of understanding and sensibility and that all knowledge of phenomena in nature is synthetically determined by the relationship between these two faculties (understanding and sensitivity).





Thus, Kantian epistemology is part of the mutual dependence between sensitivity and understanding, in the sense of granting our thought to scientific objectivity, that is: sensitivity is a particular source of material representations; while understanding brings together, according to the laws and rules, the diversity of phenomena to make them intelligible, that is, objective.

Because of this, Kant understands that the PRS in theoretical philosophy is of a synthetic order, that is, the valid application of the PRS consists in the determination of all scientific knowledge of the phenomena in the possible experience. Therefore, we can say that the PRS consists of an a priori synthetic principle by which it subordinates all phenomenal objects inserted in the epistemological scope.

However, Kant points out that Wolff and Baumgarten sought to found the PRS analytically, that is, based only on the logical principles of identity and not a contradiction, without any reference to experience. Given this, Kant's position is the opposite, as he understands that the PRS can have a valid application in the realm of possible experience, and such an application of the PRS is made by the understanding of an epistemological character.<sup>8</sup>

For Kant, the PRS must be synthetic because "in the absence of this method and in the illusion of wanting to dogmatically prove synthetic propositions recommended by the empirical use of the understanding as its principles, it happened that a proof of the sufficient reason principle was attempted" (KrV), B 265). In this way, Kant admits that the philosophies that founded the PRS only with logical principles resulted in the fruitless dogmatic demonstration because sufficient reason has the status of a *a priori* synthetic principle that concerns possible experience, that is, it subordinates empirical phenomena in the domain of theoretical.

In another passage from CRPu, Kant emphasizes the synthetic character of PRS, that is, that PRS must apply to phenomena in nature. In the section "Discipline of pure reason concerning its proofs," he states that the PRS must be grounded in a transcendental way, that is, the principle is imposed on the contingent facts of the world:

All attempts to prove the principle of sufficient reason have been in vain, according to the general admission of connoisseurs; and before the appearance of transcendental criticism, it was preferred, since this principle could not be abandoned, to resort obstinately to common sense (an expedient that always proves a situation of despair in which the cause of reason can be found) rather than trying to devise new dogmatic proofs (KrV, B 811-12).

In short, Kant's proposal for the PRS, in this passage of the CRPu, is of a transcendental order, which means that the PRS needs an interaction with the possible experience, mainly in the task of determining it together with the empirical objects. In this sense, we have, in Kant's sense, a valid application of the PRS of epistemological nature, thanks to its synthetic or transcendental foundation - this point of view is generally confirmed by the interpretations of Melo (1992), Longuenesse (2001), Kauark (2014), and Hirata (2017).

Indeed, in the article entitled: *The principle of sufficient reason – limits and conjectures*, Adélio Melo (1992) admits that the PRS equated by Kant resorts to the idea of empirical events, that is, it refers to the framework of possible experience to validate its possibility in the theoretical scope. In this way, the PRS is valid for things as phenomena in space and time.

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<sup>8</sup>It should be noted that Kant's position vis-a-vis Baumgarten regarding the relationship between the PRS and PNC seems a bit ambiguous. For, on the one hand, Kant criticizes Baumgarten for having analytically proved the PRS from the PNC (Prol., AA 04:270), on the other hand, Kant agrees with him when he states that the PRS is subordinate to the PNC (ÜE, AA 08: 193). Without delving into the merits of the issue, one can justify such subordination of the PRS to the PNC in Kant as he understands the PNC in the CRPu – as already highlighted (footnote nº 5) – as the supreme principle of all analytic judgments (KrV, B 191).



For Melo, the PRS is an a priori synthetic principle, as it is always related “to changes and not just to the possibility of *contrary thinking*” (1992, p. 160). Thus, the author demonstrates the use of PRS in possible experiences. So, the PRS is conceived by the interpreter as possessing the special property of making experience possible, and this, in turn, “grounds” the very principle.

In turn, in Kant’s Deconstruction of the Principle of Sufficient Reason, Béatrice Longuenesse (2001) states that the universal validity of the principle of sufficient reason is its reference to the objects of perceptual experience, that is, the PRS, as a synthetic a priori principle, establishes the conditions of possibility of phenomena in nature. In this way, the author considers sufficient reason to be founded on the transcendental method established in the Critique of Pure Reason.

In his book *Hobbes and Leibniz: Causality and the Principle of Sufficient Reason* (2017), Hirata demonstrates that the PRS formulated by Kant’s philosophy ensures the connection of cause and effect between phenomena in nature according to the temporal order of succession, that is, the author presents the transcendental use of the PRS referenced to the objects of experience, therefore, defends a position according to which Kant’s PRS is “an exclusively epistemological principle, aimed solely at the knowledge of phenomena” (HIRATA, 2017, p. 253).

Finally, in the article *Empirical Science, Causality and Sufficient Reason*, Patrícia Kauark (2014) states that the PRS acquires new contours in CRPu, mainly because it refers to the objects of our perceptual experience, that is, the principle needs to be compelled to the relations realities of phenomena in empiricism. Thus, the author admits the PRS as an a priori synthetic principle, as it determines the possible experience. In this way, she concludes that the PRS applied synthetically to phenomena in nature “belongs to transcendental logic, and not to pure general logic” (KAUARK, 2014, p. 187).

Taking into account the use of PRS in the transcendental scope, we have its validity supported by epistemological arguments within Kant’s theoretical philosophy, so that the synthetic use of PRS must apply to the contingent facts of the world, mainly in the second analogy. Thus, the utility of the PRS conceived by Kauark has an interaction with the reality of phenomena in nature from an epistemic point of view.

In summary, our hypothesis that the PRS has a valid application of epistemological nature, operated by understanding, is supported by the interpretations of these three commentators. However, these authors defend different positions regarding the relationship of the PRS to the principle of causality in the second analogy. Insofar, they assume either the thesis of the reducibility of the PRS to causality (Melo, Longuenesse, Hirata) or its irreducibility (Kauark). Furthermore, it should be noted that his analyses of the PRS are generally limited to the relation of this principle to the concept of causality in the second analogy, although, as will be defended in this article, this is not the only possible application of the PRS in Kant’s theoretical philosophy. Indeed, the PRS has valid applications made by reason (in regulatory principles) and invalid applications made by understanding and reason together (in antinomies).

#### **a) The reducibility of PRS to causality thesis (Melo, Longuenesse, and Hirata)**

In Kant’s interpreter’s tradition, the thesis that the PRS is restricted to the law of causality appears in the Second Analogy of Experience of the CRPu, as supported by the views of Melo (1992), Longuenesse (2001) and Hirata (2017).

On the one hand, Melo states that “Kant, finally, restricts the principle [of sufficient reason] equated by Leibniz to the principle of causality applicable to the domain of possible experience” (1992, p. 160,

our additions and emphasis). This means that the commentator's philosophical position is that the PRS is reducible to causal connection, particularly concerning the second analogy.

In another passage, the author defends the same position of sufficient reason as subordinate to causality, in which he says that "the philosopher [Kant] recognizes that the Principle of Sufficient Reason, as a principle of causality, is the foundation of possible experience" (MELO), 1992, p. 161, our additions). In this sense, we recognize the equivalence between the PRS and the causal law in Kant's philosophy and that both concepts support the empirical field.

The author also defends the argument according to which the PRS and the law of causality are synthetic a priori principles that need to determine the phenomena in nature, and, at this point, we can agree with their interpretation. But we disagree with its philosophical meaning that asserts the idea of PRS restricted to causal connection, especially in CRPu, because, as previously stated, we maintain that PRS is a logical principle that has valid applications made both by the faculty of reason and by the faculty of understanding. Therefore, we have a differentiation concerning the applicability of the PRS to the different theoretical domains of Kant's philosophy.

On the other hand, Longuenesse (2001) maintains that Kant's proof of the PRS coincides with the causality principle proof, or rather, in his words: "What Kant describes as his 'proof of the principle of sufficient reason' is not if not its proof, according to this method, of the causal principle in the Second Analogy of Experience in the *Critique of Pure Reason*" (p. 67, our translation). Thus, the commentator establishes a correspondence of the epistemological proof of the PRS through a transcendental way in face of the statute of the principle of causality in the CRPu second analogy.

To emphasize Longuenesse's philosophical position concerning the idea that PRS is reducible to the cause-effect connection, we will use another passage that the author writes: "In contrast, in the critical text (Second Analogy of Experience), Kant proves the principle of succession, which he equates with the causal principle, and, in so doing, provides 'the only proof' of the principle of sufficient reason" (2001, p. 68, our translation). In other words, the interpreter conceives the second analogy of CRPu as providing proof of the principle of sufficient reason because of the causal principle, i.e., the PRS statute achieves sufficiency thanks to the proof of the principle of temporal succession.

In this sense, we share with Longuenesse the understanding of PRS as a pure principle of synthetic order, in the sense that PRS is a logical principle that can have valid applications in the field of possible experience. However, we admit that the proposal given by the author to the problem between the PRS and causality is not sufficient, as she considers sufficient reason to be restricted to the causal law. Thus, as previously stated, we support the opposite idea that the PRS cannot be reduced to the law of causality, as the definition of the PRS is much broader, and it can have several possible, valid, and invalid applications.

Finally, Hirata (2017) states that Kant and Schopenhauer return to the PRS but metamorphose "into an exclusively epistemological principle that ensures the validity of natural science as a mere objective representation of phenomena" (2017, p. 249, emphasis added). This means that the philosophies of Kant and Schopenhauer direct the PRS only through epistemological bias since this principle provides objective validity for phenomena in nature. Therefore, we can say that Hirata defends Kant's philosophy, the thesis according to which the PRS is restricted to the law of causality in the second analogy of CRPu.

In Hirata's view, the Kantian formulation of the PRS is reducible to epistemological aspects insofar as this principle is thought of in the order of temporal succession, or rather, Kant's PRS presents only strictly transcendental jurisdiction, because it is valid exclusively in the domain of the phenomena of nature and, consequently, it lacks a teleological and transcendent meaning - which, in a certain sense, contradicts its



hypothesis defended for the Leibnizian system, which conceives the PRS as a teleological cosmos principle -, thus resulting in the affirmation that the PRS elaborated by Kant is reduced “to a principle of determining a temporal order [causality] in representations [space-time]” (HIRATA, 2017, p. 250, our additions).

However, as we indicated above, Kant conceives the PRS basically as a logical principle of knowledge, so we cannot conceive of it only as an exclusively epistemological principle. Furthermore, the interpretation of the PRS as a teleological cosmological principle is only valid with restrictions, that is, from the systematic or architectural point of view of its critical philosophy, and not from the strict point of view of its theoretical philosophy, particularly in relation to the question of the second analogy.

Considering the PRS proposed by Hirata, we can say that, firstly, through the valid use of PRS made by understanding, we find rational explanations for the occurrence of phenomena in nature from our cognitive capacity of representation. Secondly, the PRS considered in a teleological perspective, that is, directed according to a supreme principle of finality (*Zweckmässigkeit*), can be interpreted, within the critical system as a whole, as a legitimate valid application of the PRS carried out by the faculty of reason. . In this sense, Hirata’s view of PRS as a teleological cosmos principle can be subordinated or included by the logical interpretation of PRS in Kant, as proposed in this article<sup>9</sup>.

In conclusion, our philosophical position is that Kant’s PRS has a valid application of an epistemological character made by understanding, which is generally corroborated by Melo, Longuenesse, and Hirata. However, we disagree with the three authors regarding the thesis defended according to which the PRS is reducible to the law of causality in the second analogy. This last commentator presents the PRS strictly under the epistemic jurisdiction to validate the empirical objects inserted in the temporal order, while the second author expresses the proof of the PRS because of the epistemic scope as dissolved thanks to the statute of the causal principle, finally, the first the author recognizes the restriction of sufficient reason concerning the law of causality. On the contrary, we maintain that the Kantian formulation of the PRS consists of the idea of the irreducibility of the PRS to causality, insofar as the PRS is conceived by Kant as a logical principle, whose applications by understanding and reason can be valid and/or invalid.

## **b) The irreducibility of the PRS to causality thesis (Kauark)**

Unlike Melo, Longuenesse, and Hirata, Kauark (2014) defends the thesis that sufficient reason cannot be subordinated to causality, that is, it does not admit the restriction of the PRS to the connection of cause-effect in the second analogy. As she writes:

The principle of sufficient reason, as a transcendental principle in its theoretical use applied to the field of possible experience, cannot simply be assimilated to the principle of causality, as established in the second analogy of experience, in the framework of Transcendental Analytic (KAUARK, 2014, p. 196).

From this angle, Kauark’s defense follows the philosophical position where the reducibility of the PRS to the causality principle argument cannot be accepted since, on one hand, we have the causal principle concerning the determination of temporal order, and, on the one hand, sufficient reason that requires complete unity, that is, the PRS needs a complete idea of the understanding concepts. Therefore, the function of both principles differs from the domain of Kant’s theoretical philosophy, especially in the second analogy of CRPU.

From this perspective, Kauark attributes the PRS’s new contours in the CRPU, mainly in the sense of seeking to unify the concepts of understanding through pure ideas, that is, the PRS elevates the categories

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<sup>9</sup> For delimitation purposes, this article will not address the valid application of the PRS by reason as a purpose principle (*Zweckmässigkeit*), but only as a regulatory principle (see item 4).

of understanding to the maximum according to the very ideas of reason. Thus, sufficient reason goes beyond the mere association with the principle of causality in the second analogy of experience and begins to seek “complete unity of the concepts of the understanding, even if hypothetically” (KAUARK, 2014, p. 196).

In general terms, the formulation of the Kauark PRS follows the following considerations. First, the PRS is an a priori synthetic principle, that is, sufficient reason must refer to phenomena in nature. Secondly, the principle belongs to transcendental logic. Consequently, it reverts from the epistemological foundation. Third, the PRS extends theoretical knowledge in conjunction with causality in CRPU. Fourth, it defends the argument that the PRS cannot be reduced to the causality law. And finally, fifth, sufficient reason requires complete unity to unify the understanding concepts through the ideas of reason. Therefore, the PRS, as a transcendental principle about the field of phenomena in possible experience, cannot simply be assimilated into the causality principle, as established in the second analogy.

Our philosophical proposal partially agrees with the position defended by Kauark<sup>10</sup>. We agree with the author that the PRS cannot be reducible to causality in the second analogy of the CRPU, thus contradicting the Melo-Longuenesse-Hirata thesis. However, we disagree with Kauark, as the latter, similar to Melo, Longuenesse, and Hirata, understands in a limited way the application of PRS to causality in the second analogy, forgetting its applications in other contexts of Kant’s theoretical philosophy, such as in the case of the antinomies and regulatory principles. Although Kauark has the advantage over Melo, Longuenesse, and Hirata in vaguely realizing that the PRS has relations with regulatory principles (Transcendental Dialectics), thus going beyond the context of causality in the second analogy (Transcendental Analytics), she does not develop this point of view systematically and consistently, as indicated here. Indeed, the development of such a perspective, absent in Kauark, Melo, Longuenesse, and Hirata, would only be possible if their reflections began with a broad analysis of the definition of PRS in Kant and then showed the valid and invalid applications of the PRS. PRS for understanding and reason, to finally understand that PRS is a logical principle with applications in several different contexts in Kant’s CRPU.

#### **4. Valid use of the PRS for reason: the regulatory principles**

While, in the previous topic, a valid application of the PRS made by understanding was evidenced, regarding the concept of causality in the second analogy, in this topic, another valid application of the PRS will be shown, now made by reason, contextualized in the cases of regulatory principles.

Although reason has a natural propensity to go beyond the possible experience field, understanding sets limits to its concepts precisely by referring to possible experience. Therefore, Kant shows that reason can interact positively with the understanding, as it makes a regulative rather than constitutive use of its principles to orient, in general, the use of understanding itself in the search for the systematic unity of knowledge.

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<sup>10</sup> In his article *Empirical Science, Causality and Sufficient Reason in Kant*, Kauark (2012, p. 191-96) offer us an example of the valid applicability of PRS in the domain of pure reason when examining the constitution of matter. The author states that we have two opposing scientific theories to explain the empirical characteristics of matter, namely, the dynamist explanation of matter and the mechanistic explanation of it. The first considers matter through the distinction in the combinations of the original forces of repulsion and attraction, which according to Kauark, Kant defends, because this approach establishes, a priori, from the fundamental driving forces of attraction and repulsion, the concepts that must justify the main features of the matter. While the second concerns all the specific differences in a matter that can be explained by the combination of absolute fullness and absolute void, that is, atoms and vacuum. However, the interpreter proposes to understand the best solution/reason sufficient to legitimize the choice between two opposing scientific concepts, considering the structures of matter, such as density, cohesion, elasticity, fluidity, dissolution, or decomposition.



Thus, the task of reason is to order or systematize the a priori concepts of the understanding, giving them the maximum of unity, that is, attributing to them the totality of the greatest possible extension, having in view, for this task, the use of ideas or regulatory principles. In other words, regulatory principles are concepts used by the rational faculty to seek the maximum unity, extension, and completeness of knowledge.

In Kant's view, the faculty of reason "never refers directly to an object, but only to the understanding and through it to its empirical use" (KrV, B 671), i. e., the reason corresponds to the totality of the pure concepts of the understanding and to their conditions by which they are produced. Thus, in the "Appendix to Transcendental Dialectics: On the Regulatory Use of the Ideas of Pure Reason" from the CPu, Kant exposes the activity of reason as unifying the entire theoretical system because of the regulative principles:

Therefore, I say that transcendental ideas never have a constitutive use (...). On the contrary, they have an excellent and necessary use, that is, the regulative use that consists in directing the understanding towards a certain objective with a view to which the guidelines of all its rules converge to a single point (...). [This regulative usage] serves to endow such concepts [of the understanding] with maximum unity alongside maximum extension (KrV, B 673).

This passage asserts that the faculty of reason is a producer entirely of the systematicity of knowledge itself, that is, reason seeks to carry out an ordering from ideas or regulative principles in a complete set of our knowledge, arranged by the understanding. Therefore, we can say that reason seeks, through regulatory principles, a totalizing form of knowledge or understanding that contains sufficient conditions to postulate the complete unity of knowledge.

It is worth mentioning that Kant conceives the statute of the three regulatory principles as merely heuristic, serving only the formal interest of reason, that is, the rational faculty makes logical use of heuristic principles in an attempt to postulate the greatest possible systematic and necessary unity for all understanding knowledge, as these are related to the existing data inexperience. Or, in the philosopher's words, every regulative or heuristic principle of reason indicates "the procedure according to which the empirical use of the understanding concerning experience can become completely in agreement with itself" (KrV, B 694).

Based on the three main metaphysical objects (soul, world, and God), Kant formulates in parallel the three regulative principles for a reason to legislate on the understanding: the principle of homogeneity, specification, and continuity (KrV, B686). In general terms, the first postulates the homogeneity of the parts under a superior genre (or foundation); the second, the specificity of the parties to a greater extent; and the third, the gradual passage between the parts (KrV, B688).

Although the application of the PRS can be considered from the point of view of these three regulatory principles, for the sake of delimitation, we will restrict the analysis only to the case of the first principle indicated by Kant: the principle of homogeneity (PH). To support the thesis proposed in this article, we will show that:

(i) The PH satisfies the two conditions established in the definition of the PRS, and (ii) the PH is a valid application of the PRS made by reason.

In fact, in general terms, it can be said that the principle of homogeneity satisfies the two supposed conditions of the definition of the PRS: on the one hand, the superior genus implies a foundation (Grund), where such foundation means here a principle or a set of higher-order principles from which other principles or subsets of principles, are derived (i.e., the species that Kant speaks of); on the other hand, species constitute the true consequence (Folge), in the sense that it represents principles or a subset of principles deducible from that higher-order principle (called genus by Kant).



Concerning the first condition, the PH summarizes that reason guides the understanding to always seek a higher genus under which it can confer unity to the multiplicity of species, that is, the PH, as it guides the search for a certain uniformity of the sufficient totality of all possible empirical concepts, it finds a superior genus, which can be regarded as the ground condition (Grund) of the PRS used by reason regarding PH.

As for the second condition, the PH determines that, from a genus or set of higher-order principles, subsets of principles are derived and are considered as species by Kant. It is in these derivations of species that we find the true consequences provided by a common principle given by PH. Thus, we can grant another condition of the PRS regarding the consequences (Folge) promoted by the interest of reason to homogeneity.

Kant exemplifies a case of the use of PH made by chemists since they managed to reduce all salts to two main types of genera, acid, and alkali, but they still tried to consider that this distinction could be a mere variety, or rather, different subspecies of the same fundamental material. Therefore, they were not satisfied with this idea, so they proposed the establishment of a single principle capable of accounting for this variant. The proposed concept was that of an element or chemical substance. From this, we can say that the PH postulated by reason seeks unity for a diversity of subspecies and species.

Concerning the second condition of the PRS definition, we consider the philosophical position according to which the PH constitutes a valid application of the PRS, mainly in Kant's theoretical philosophy context. As already pointed out, all regulatory principles, including homogeneity, perform a heuristic function (KrV, B644) through which they guide the understanding in the elaboration of a priori knowledge about nature. In this way, heuristic principles, unlike metaphysical ideas (soul, world, and God), indirectly have objective validity, as their application to understanding aims at possible experience. In particular, it can be said that the PRS of reason indirectly guides the understanding to use PH in the search for superior genera with objective validity, as exemplified by Kant in the case of the formulation of the concept of chemical substance. Such an indirect application of the PRS, through the PH, is valid because it has objective validity, that is, it has an intuitive reference or possible application in experience.

In summary, we can say that the valid applicability of PRS by the rational faculty to regulatory principles, especially PH, follows the following considerations. First, PH satisfies the two requirements of sufficient reason as a logical principle. Second, the use of PRS by reason manages to provide sufficiency for the regulatory or heuristic principles, as discussed in this subsection with the PH, so that they can presuppose the systematic unity and completeness of the knowledge provided by the understanding, granting them the legitimacy from the empirical use concerning the objects of experience. Therefore, Kant's proposal regarding the valid use of the PRS by reason, especially the regulatory principles, consists of the systematizing task and elaborating the *a priori* understanding knowledge to achieve a certain logical perfection of the complete theoretical system of pure reason.

## 5. Invalid applications of the PRS by understanding and reason: the antinomies

The previous topic showed that the PRS is a logical principle that can have a valid application performed by both understanding and reason, which was exemplified, respectively, in the case of the second analogy and the regulatory principles. In the present topic, we will show that the PRS can also have an invalid application made by both understanding and reason, and Kant's exposition of antinomies will be indicated as an example of this.

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<sup>11</sup>As Loparic observes, "the main function of these principles is not theoretical but methodological: they serve to organize, in a systematic way, empirical research guided by the principles of understanding" (2000, p. 115).



The antinomies appear in the Transcendental Dialectics of the CPU, part in which Kant develops his critique of traditional metaphysics, whose main focus is the analysis of the three main metaphysical objects: God, soul, and world (KrV, B395 – note). In general terms, Kant shows that attempts to know such objects fail because reason gets involved in insurmountable logical problems, among which he cites paralogisms, antinomies, and ideals (KrV, B398) – respectively, for the case of the idea of a soul, the world and God.

As in the case of regulatory principles, although it is possible to consider the invalid application of the PRS in these three rational conflicts, for the sake of delimitation, its analysis will be restricted to the case of the third antinomy since it deals directly with the concept of causality, which was addressed by Kant earlier in the second analogy. The purpose of this delimitation is to show more clearly that the PRS can have a valid or invalid application concerning the concept of causality itself, depending on the context in which its use occurs by understanding and reason.

In particular, the third antinomy has to do with the dichotomy between two contradictory positions: on the one hand, the thesis of free causality is defended by reason, and, on the other hand, the antithesis of mechanical causality is defended by the understanding (KrV, B 472-79). Kant argues, through apagogic proofs, that both the thesis and the antithesis can be justified as true, which contradicts the logical rule valid for the case of contradictory propositions<sup>12</sup>.

The essential thing to be highlighted here about the third antinomy is the fact that both the thesis and the antithesis deal with the concept of causality, as both presuppose causal series of chaining events in the world. The difference is that the causal series of the thesis (held by reason) is finite, while the causal series of the antithesis (held by the understanding) is infinite. For Kant, the general problem of the two causal series is that both are indeterminate: in the case of the finite series of reason, because in this causal series, a free cause is not specified or known, that is, a natural phenomenon that produces a causal series and that at the same time is not specified or known in this causal series is not produced by another previous causal series; and in the case of the infinite series of the understanding because the causal series linked to the mechanical cause is thought of in an absolute and complete way, whose problematic character of this series is that it cannot be completely traversed.

After these brief explanations of the third antinomy, it can be said that the thesis and the antithesis are cases of invalid application of the PRS by understanding and reason. First of all, it should be noted that the thesis and the antithesis satisfy the two conditions set by the definition of the PRS, namely: on the one hand, both indicate a foundation (whether it is a free or mechanical cause) and, on the other hand, they both presuppose as true the series resulting from their respective foundations. Secondly, because the thesis and antithesis represent an invalid application of the PRS, insofar as the causal series assumed by both is thought of in an indeterminate way as the concepts employed by reason (free cause) and by understanding (mechanical cause) have no possible reference in sensible intuition. In other words, the concepts of free cause and mechanics conceived by reason and understanding, respectively, are thought only analytically, but not synthetically, and, therefore, they do not have objective validity but only logical validity.

## 6. Final considerations

At the end of this exposition, we can draw three main conclusions. Firstly, regarding the definition of the PRS, we show that it is a principle of a logical or formal nature, whose two conditions presupposed in it employ terms (Grund and Folge) that are not restricted to a causal relationship between the two since both can be seen, respectively, as the predecessor element (Grund) and the successor (Folge) of

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<sup>12</sup> The logical rule says that if the propositions are contradictory, both cannot be true and that if one of them is true, the other is necessarily false.



any series or succession. The first element only indicates a foundation or reason, while the second means a true sequence or consequence from the first. This way, the PRS must be understood as a simple logical form whose content of its two conditions (Grund and Folge) can be filled by concepts and/or valid or invalid judgments from an objective point of view, that is, according to such contents have or no reference in the possible experience.

Secondly, regarding the applications of the PRS, we show that it is a logical principle that can be applied in a valid and invalid way, both by understanding and by reason. The valid application of PRS occurs in Kant's theoretical philosophy as the concepts used by understanding and reason serve to fulfill the two conditions defined by PRS (Grund and Folge), which have some reference in sensible intuition, as in the case of PRS, case of the second analogy (causality), and the regulative principle of homogeneity. On the other hand, the invalid application of the PRS is seen when the concepts that fulfill the two established conditions (ground and consequence) do not have objective validity but only logical validity, that is, when they have no reference in sensible intuition - as can be seen in the context of the third antinomy (free and mechanical cause).

Thirdly, regarding the debate on the thesis of the reducibility or irreducibility of the PRS to causality, we partially agree and disagree with the position of Kauark, Melo, Longuenesse, and Hirata. In general, we agree with the three authors as they affirm the transcendental or empirical character of the PRS in the second analogy. However, we disagree with Melo, Longuenesse, and Hirata regarding the thesis of the reducibility of PRS to causality. In turn, we agree with Kauark on the thesis that PRS is irreducible to causality. However, we differ from the latter in the sense that his view of PRS in Kant's CRPu is not broad enough to adequately understand the logical definition of PRS, as well as its different possible applications in this work, both valid and invalid.

Finally, in general terms, we argue throughout the text that the positions of these three authors have at least three main limitations. First, they do not clarify or correctly understand the definition of the PRS as a logical principle, as a simple form (abstract rule) that may or may not be filled by intuitive (referential) contents. Second, they do not distinguish valid and invalid applications of PRS carried out by understanding and reason, in terms of Kant's transcendental semantics, that is, of the relationship or not of PRS to sensible intuition. Third, they do not adequately show the various possible applications of PRS in Kant's theoretical philosophy in general (as, for example, in antinomies and regulative principles), but they restrict their analysis to the application of PRS to causality in the second analogy - although Kauark only suggests that vague and still unclear its general relationship to regulatory principles.

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